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Planners

Urban Designers

Amherst Parking Facilities Study

Town of Amherst, Massachusetts

Final Report
29 January 1990

Planning Department

Town Hall

4 Boltwood Ave.

Amherst, MA 01002-2351

Amherst Parking Facilities Study

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Final Report
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Project No. 8834

INTRODUCTION

This Final Report of the Amherst Parking Study, together with the Phase I Report dated 25 January 1989, documents the design analysis of proposed public parking facilities on three alternative sites in the center of the town. This Report includes a schematic design of a proposed parking garage on the site known as the CVS site. This location was selected by the Amherst Parking Task Force on the basis of site analysis data included in the Phase I Report, together with other considerations important to the Town. These site analyses are in the Appendix to this report.

The proposed facility investigated in this schematic design is a garage on 3-1/2 levels providing 251 spaces. The garage is organized as a continuous helical ramp, rising in a clockwise direction, with two-way traffic throughout. The ramp extends one-half level below grade; the top level is open parking on the garage roof so that the building typically stands 2 stories high. The garage is designed for metered parking without a fee collection booth. Other operating and revenue systems are also possible with minor changes in the garage as designed. The Financing Feasibility Study prepared by Legatt-McCall Advisors and the Traffic Study by Abend Associates are included in this Report.

Adjacent surface parking on this site adds 17 spaces, for a total of 268 spaces. The existing surface parking on this site yields about 107 spaces.

DESIGN APPROACH

The design proposed in this schematic study seeks to minimize the negative impacts usually associated with parking garages, while maintaining the efficiency and economy of the facility in its construction and operation. The angled shape of the site has been resolved into a rectilinear structure through the introduction of a series of "steps" in the plan form on each of the longer sides. This makes the garage more compatible with the forms of the other buildings around it, and also visually divides the length of the garage into a series of elements which are consistent with the scale of the neighboring buildings and more pleasing to persons using the garage. In addition, the exposed building components, including spandrels, railings and grilles, are designed to be horizontal instead of sloping with the ramps behind them. This will contribute strongly to a sense of resolution with the surrounding building context.

The overall height of the garage structure is typically limited to 22 feet (33 feet at the stair towers) in order to relate positively to the residential buildings across North Prospect Street and to the Jones Library, as well as to the adjacent commercial and church buildings. For instance, the residences on North Prospect are typically 2-1/2 stories and about 30 feet high; the St. Brigid Parish Center is 2 stories but similarly about 30 feet high. The CVS building is about 20 feet high; the adjacent shops exceed 35 feet in height. The tallest portion of the garage ramp (about 31 feet at the high point) is designed to occur at the north side of the structure, minimizing any visual impact on the neighbors.

The design proposes a brick exterior for the garage, incorporating standard brick on the columns and wall surfaces at the building corners, with accents of 8x8 brick at the spandrels above the typical wall openings. The wall openings have colored metal grilles to provide safety for persons on the upper ramps and to help screen the cars from view from the outside. These grilles will also serve as trellises at the openings near the ground, and will provide support points for the meters at each space. A design alternative would be to increase the area of the masonry on the facade, reducing the size of the openings and substituting railings for the grilles. (The Building Code requires that the walls of the garage be open for a minimum of 50% of their height.)

The lighting elements are designed to restrict glare on neighboring properties. Multiple shielded sources on low poles (12') will illuminate the roof level, with the light directed inward from the building perimeter. Similar building mounted lights will illuminate the surrounding site area, with a limited number of sources on low poles (16'). It is important that the site and particularly the building interior be well illuminated to ensure a strong sense of security for the garage users. This can and should be done in a manner which minimizes off-site glare.

TECHNICAL CONSIDERATIONS

Six parking spaces for handicapped access (as required by the Massachusetts Code) are provided on the ground level of the garage. Since an elevator is not required for handicapped access, it is not provided in this design because its cost would not be justified for the convenience it would provide. (Typically, the maximum climb for garage patrons will be up two flights of stairs.) An issue affecting handicapped and pedestrian access in general is the slope of the walk and drive entering from North Pleasant Street. It is recommended that access be regraded from the street line approximately 75 feet back into the passageway to reduce the gradient to 5%, conforming to the Code for sloped walks without handrails.

The stair towers have been designed as essentially open structures, but roofed to be protected from snow and rain (and to conform to the Building Code). It is probable that the ground level of these stairs should be enclosed to provide security at times when the facility is not intended to be in use. Upper levels are proposed to be open for greater visibility and to reduce the apparent mass of the stair towers. The metal grilles at the wall openings will also function as part of the security enclosure.

No mechanical ventilating system is provided in this design, and is not required if the building meets the Code requirements for an Open Parking Structure. These requirements provide that 50% of the walls of each level be open for natural ventilation for 50% of their height. This provision limits the amount of garage space that can be constructed at the Basement level. The present design will have to be verified when a detailed topographic survey is available.

The parking structure is proposed to utilize long-span steel beams and steel columns, with poured-in-place concrete floor slabs. This system will allow smaller dimensions in the structural components than a precast concrete system, aiding in maintaining the desired building scale, and will be more economical to construct. The long term maintenance implications were investigated with Ed Herrmann, Executive Vice President of Meyers Parking Systems in their New York office. Their experience operating 800 parking facilities indicates that, while steel structures need to be repainted periodically, the long term maintenance costs are less with steel than with precast concrete. The primary contributing factor is the extensive deterioration caused to precast concrete by exposure to ordinary road salt. Except in coastal locations, Meyers has found that steel structures are more easily and less expensively maintained than precast concrete.

The estimated cost of the parking facility proposed in this schematic design is \$2,776,504. Improvements to the adjacent town-owned site will add about \$90,000, and about \$45,000 should be assumed for off-site improvements such as in the passageway from North Pleasant Street. These costs are estimated for 1990 bidding; to them should be added escalation for any longer timetable, as well as a planning and site subsoil conditions contingency. The complete Cost Estimate, prepared by Proest, is included in this Report, as is an Outline Specification.

Primary vehicular access will be from North Pleasant Street, based on typical parking-seeking circulation described in the Traffic Study conducted by Abend Associates. For the frequent patron, access from North Prospect Street may be more convenient. To facilitate this traffic, it is recommended that North Prospect be made two-way north from the Amity Street intersection as far as the entrance to the garage site. A projecting curb at this point can direct cars into the site and limit their northbound travel; parking would be prohibited on the two-way section of the street.

Within the site, vehicular circulation will be one-way in from North Pleasant Street and two-way from North Prospect Street. As they do now, trucks servicing CVS and the other shops can enter the site from either street and turn as required in the area behind CVS. Cars will enter the garage towards the east end of the south side; traffic leaving the garage will have the option of a second exit close to North Prospect Street to minimize traffic congestion on the site.

Pedestrians have the choice of five pathways. The primary circulation will be on a sidewalk through the passageway to North Pleasant Street, protected from the parallel vehicular traffic by bollards. Other pedestrian connections are to the Jones Library (with a possible future connection through to North Pleasant); to St. Brigid by way of an existing path entering that property alongside their rectory garage; directly to the front entrance of the church Parish Center through a door at the northwest corner of the proposed garage; and on a walkway through the site to North Prospect Street.

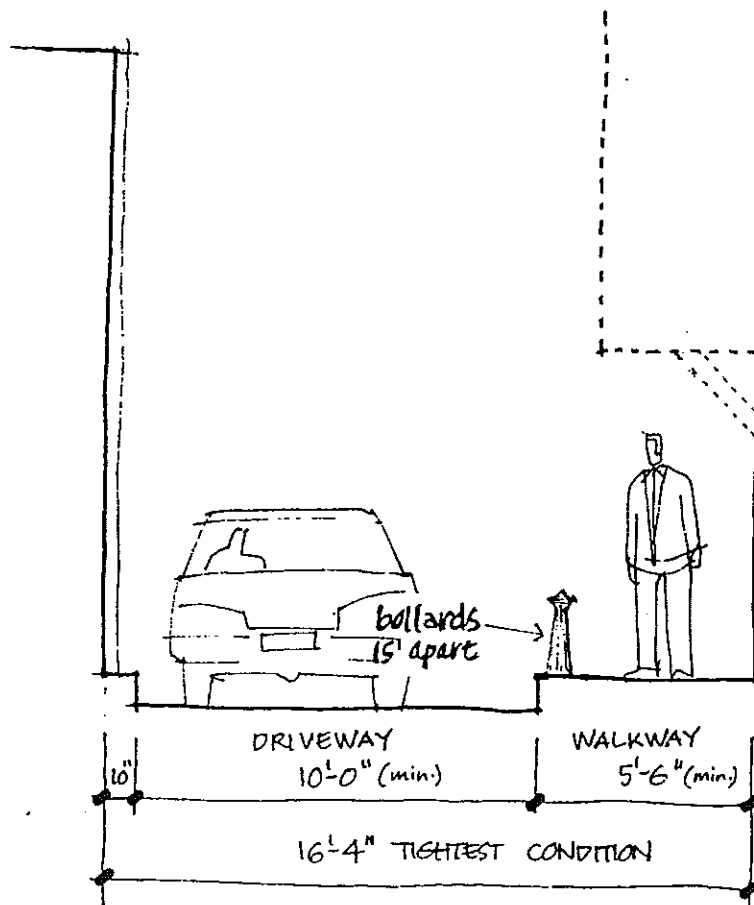
LANDSCAPE DESIGN

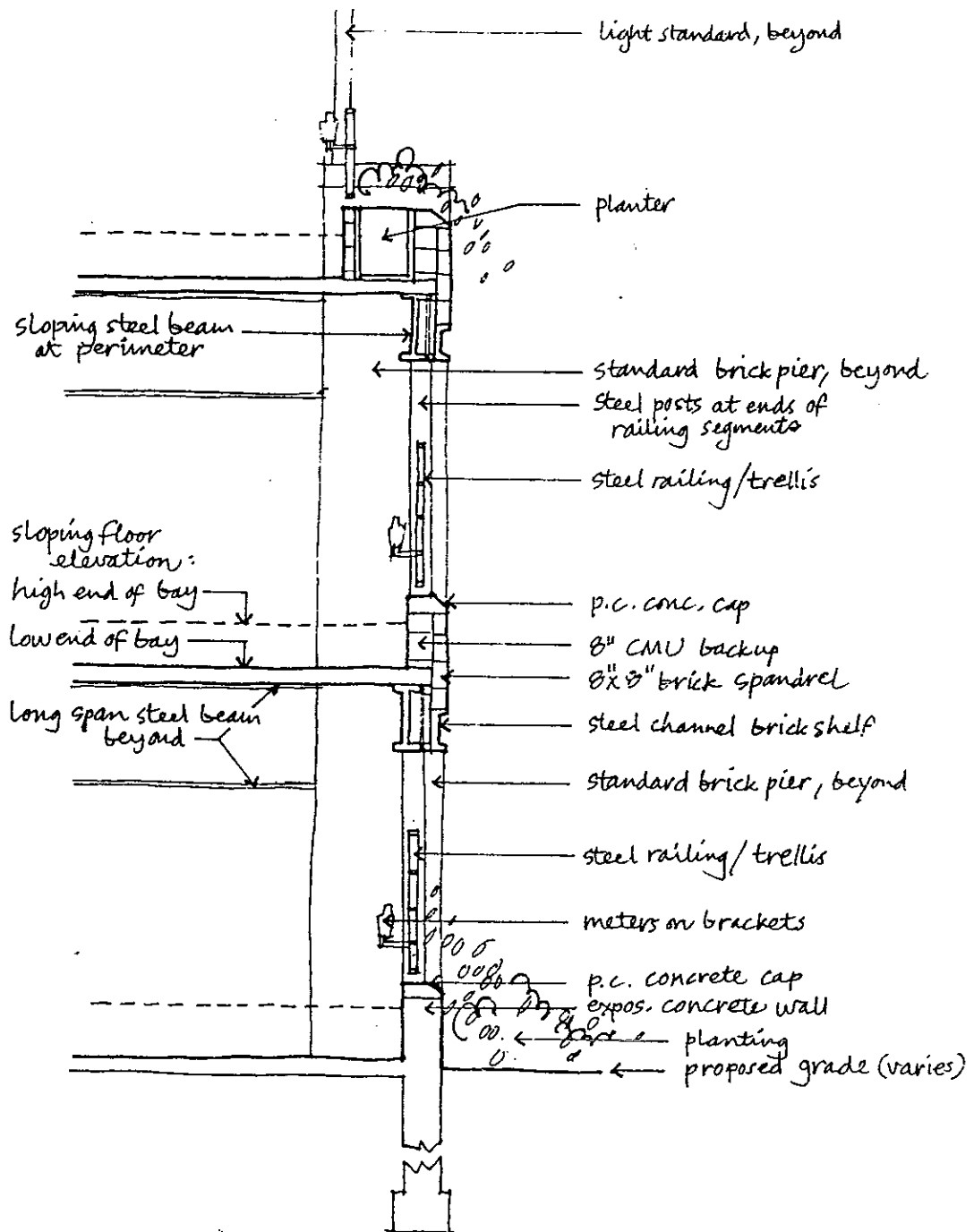
The landscape improvements, prepared by Carol Johnson & Associates, recognize the differing conditions at each face of the proposed garage. To the south, a line of ornamental trees corresponds to the steps in the building facade and parallels the drive and walkway. These trees will screen the garage from the Jones Library, and surrounding ground planting will extend up on to the trellis grilles.

To the west, new shade trees similar to ones along North Prospect Street will be combined with lower shrubs to screen the building from the neighboring residences. On the north side, shrubs will soften the building edge in the narrow strip along the Parish Center parking. To the east, the pedestrian walkway is proposed to be continued between the garage and the passageway to North Pleasant Street, on an easement in the existing private parking area behind the shops. This walkway will include paved islands with shade trees in grates. This and other walkways within the site are proposed to be paved with precast pavers, possibly similar to those used at Boltwood Walk. Other walks will be cast-in-place concrete, or asphalt to match adjacent existing walks.

Planters are proposed at the roof level of the garage. Appropriate plants here can provide trailing vines on to the trellises below, as well as evergreens for winter interest. The planters will receive adequate sun at the roof level; however, the key issue is maintenance. One possibility is for a private or public group to take on the responsibility for watering and feeding the plants in the planters. Another is to provide an automatic irrigation system (not presently included in the cost estimate). To some extent, these concerns also apply to the other planting on the site. All plant selections are designed to require minimum maintenance; however, planters, as with any plants in pots, require more attention.

A Planting Plan with planting species recommendations is included in this Report.





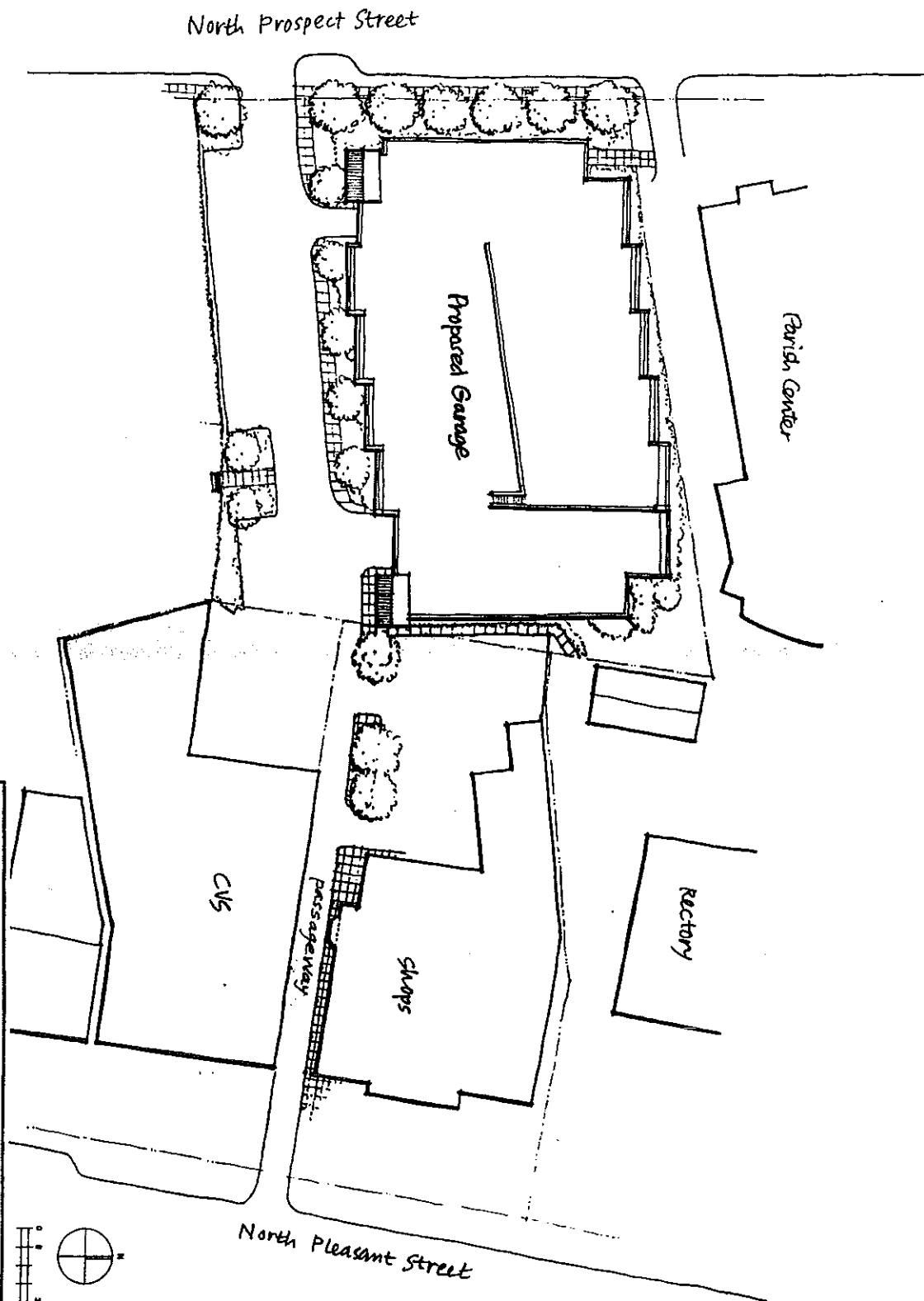
Amherst Parking Study
CVS Site

Wall Section

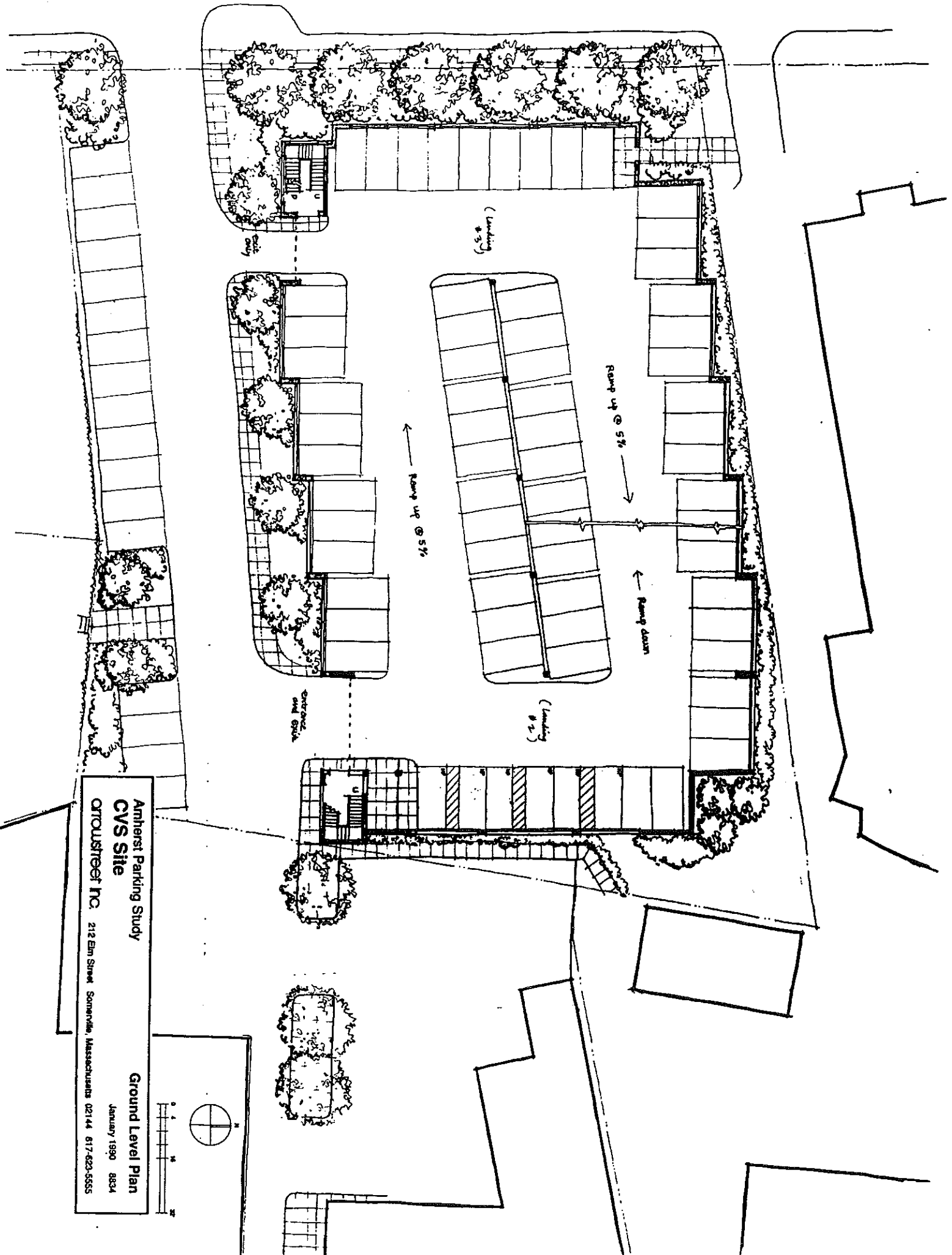
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Illustrations

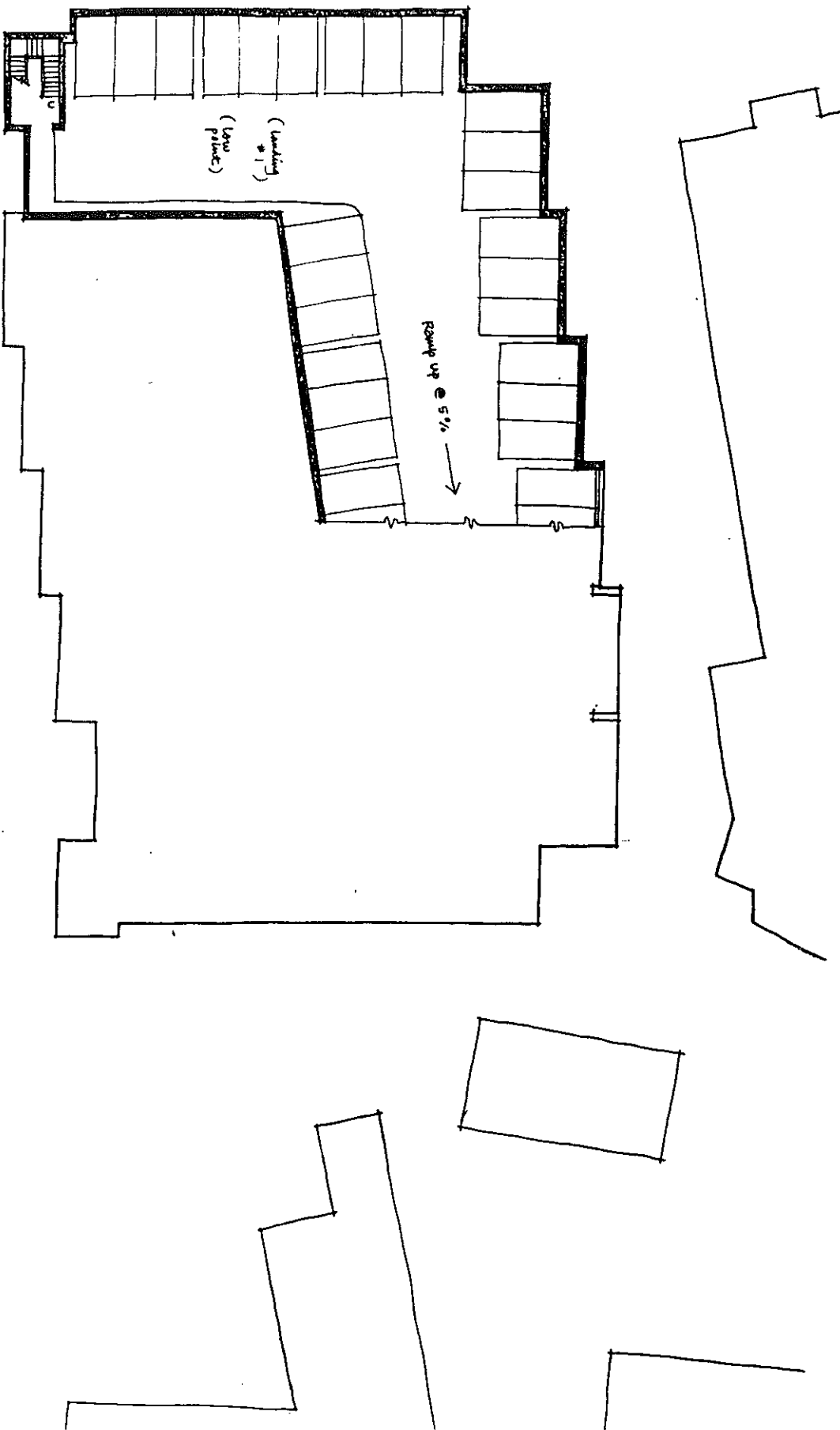


Amherst Parking Study
CVS Site
 Site Plan
 January 1990 8834
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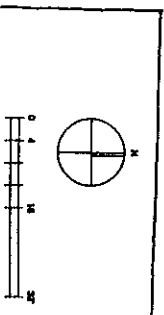
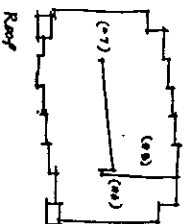
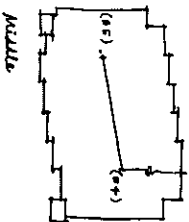
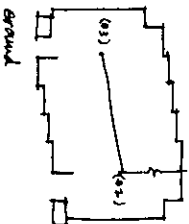
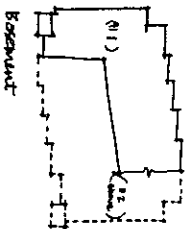


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 CVS Site
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Ground Level Plan
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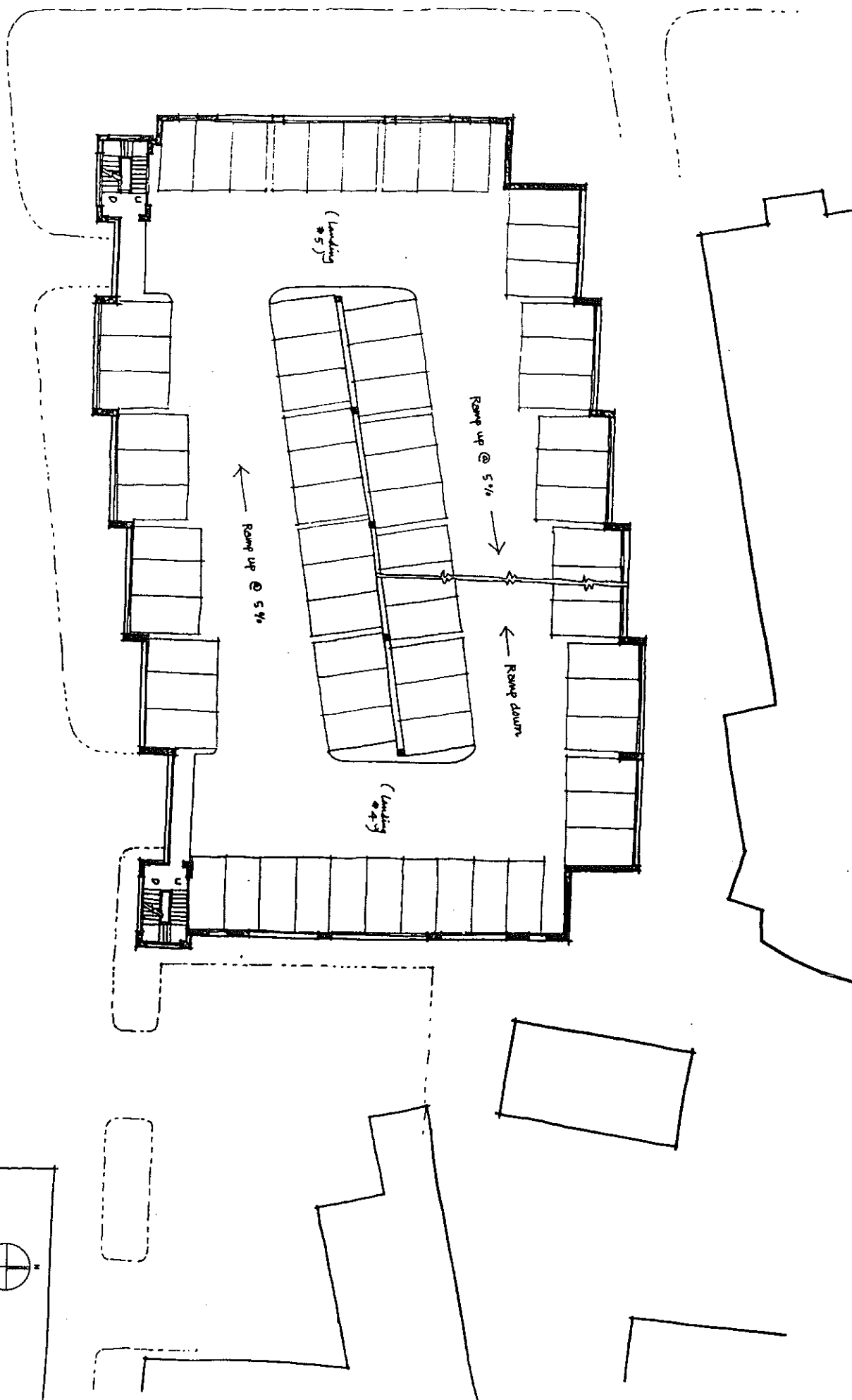


Parking Provided: 251
 Parking Structure: 17
 Total: 268 spaces
 Existing on Site: 107 spaces

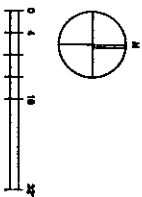
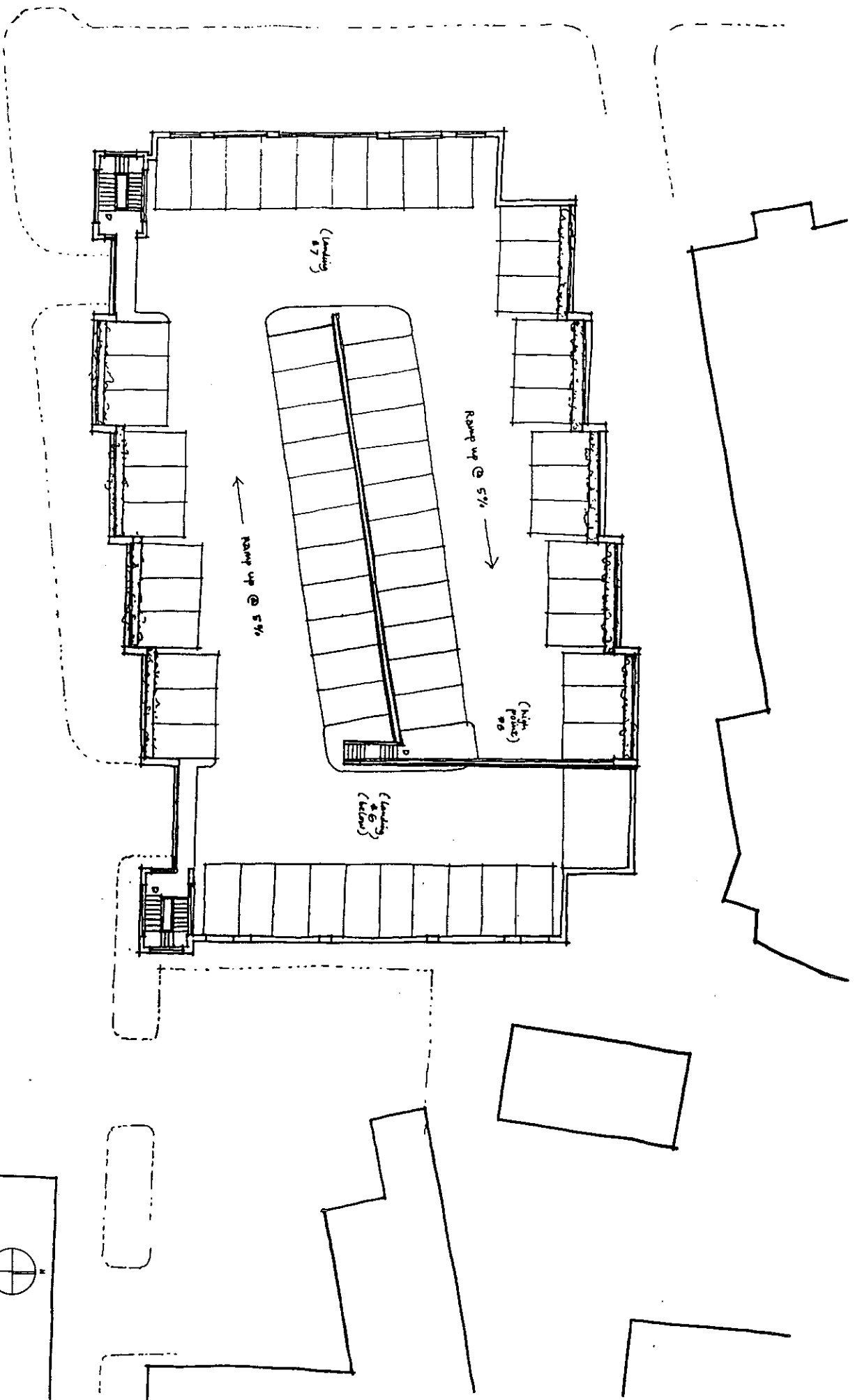


Amherst Parking Study
CVS Site
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Basement Level Plan
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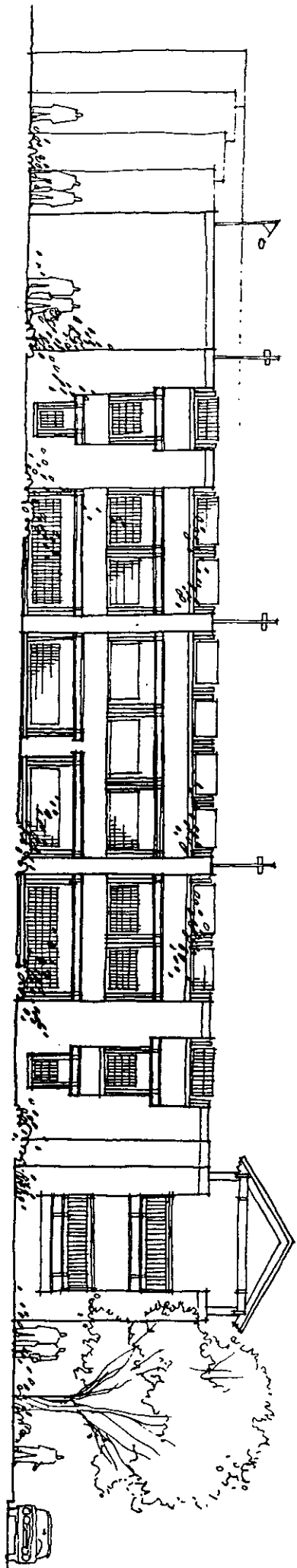


Amherst Parking Study
CVS Site
 Amroustreet Inc. 212 Elm Street Somerville, Massachusetts 02144 617-623-5555
 Middle Level Plan
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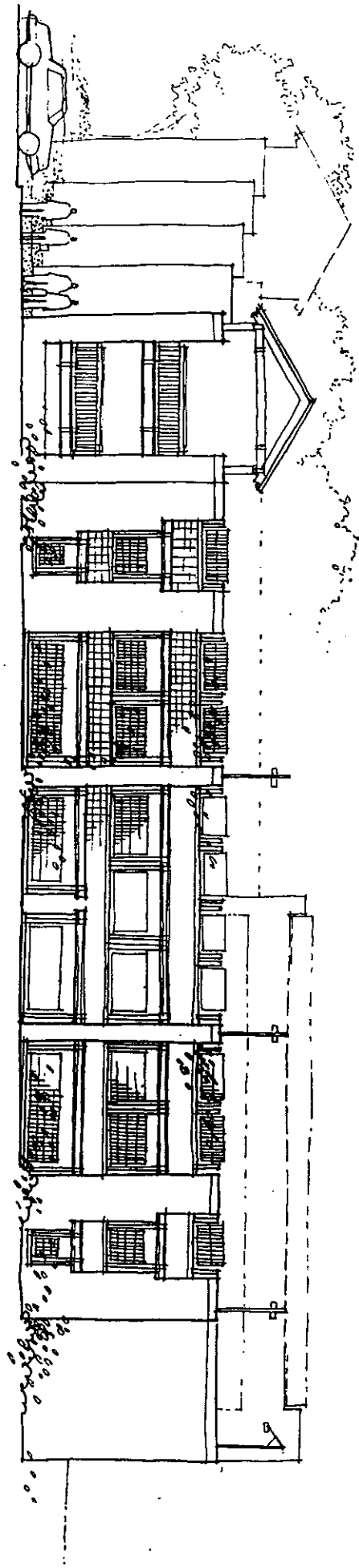


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Roof Level Plan
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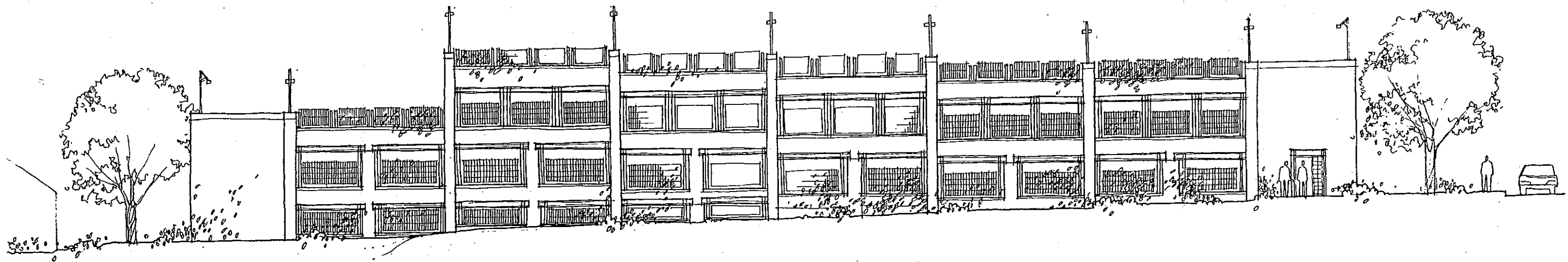


Amherst Parking Study
CVS Site
West Elevation
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Amherst Parking Study
CVS Site
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East Elevation
January 1990 6834

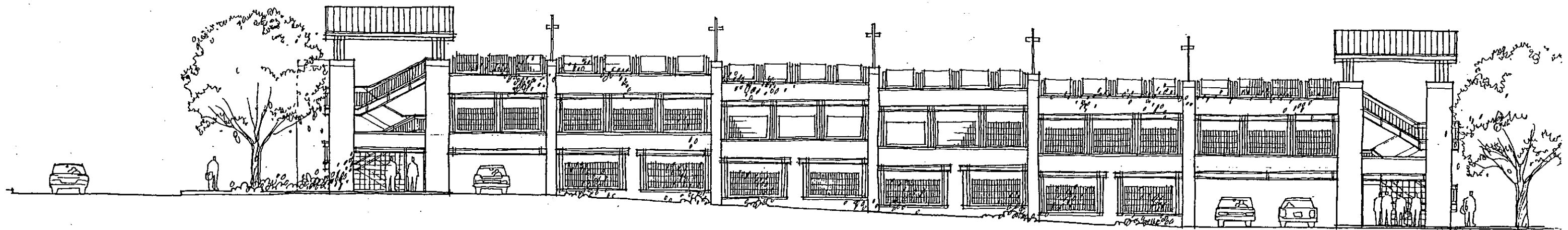


Amherst Parking Study
CVS Site

North Elevation

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Amherst Parking Study
CVS Site

South Elevation
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Outline Specification

Parking Facilities Study

Town of Amherst, Massachusetts
Project No. 8834

31 January 1990

OUTLINE SPECIFICATION

2.0 SITE WORK

2A. Demolition

1. Removal of existing site lighting and poles.

2B. Earth Work

1. Excavation, filling, backfill, compaction, and rough and finish grading.
2. Excavate for site utilities.

2C. Site Utilities

1. Storm drainage pipe, catch basins and manholes as required, and installation.

2D. Paving and Curbs

1. 3" bituminous concrete roadway and parking area paving over 12" compacted gravel base.
2. Precast concrete pavers for pedestrian walks in sand bed over compacted gravel base.
3. Precast concrete curbs at perimeter of all new paving.
4. Curb cuts and repairs to existing streets, curbs and walks.

2E. Site Improvements

1. Wood benches.

2F. Lawns and Planting

1. 6" loam and seed per Planting Plan and at all disturbed areas.
2. Trees and shrubs per Planting Plan.

3.0 CONCRETE

3A. Concrete

1. Foundation walls and footings, and basement walls.
2. 4" slab on grade.
3. Cast-in-place 6" flat slab floors, poured using removeable plywood or metal forms.
 - a. Option: precast plank floors.
4. Curbs and raised walks within floor areas, as shown on drawings.

4.0 MASONRY

4A. CMU

1. Back-up for exterior walls, and at interior partitions.

4B. Brick

1. Standard 8" brick and 8" x 8" brick in contrasting color/finish on all exterior walls.

4C. Precast Concrete

1. Precast concrete sills and caps at partial height walls; custom color.

4D. Mortar

1. Custom colored mortar throughout.

4E. Masonry Flashing and Accessories

1. 5 oz. copper fabric.

5.0 METALS

5A. Structural Metal

1. Long-span steel beams (composite action) and steel beams at slab edges.
2. Shelf angles and hangers at masonry over openings.
3. Steel columns.

5B. Miscellaneous Metal

1. Steel stairs and railings.
2. Aluminum or steel grilles at perimeter wall openings.
3. Supports for parking meters, integrated with grilles.

7.0 MOISTURE PROTECTION

7A. Waterproofing, Dampproofing, and Caulking

1. Asphaltic dampproofing on all basement walls.
2. Exterior sealants:
 - a. Between glass, metal or masonry - silicone sealer.
 - b. Between wood and all other dissimilar materials - acrylic tripolymer.
3. Joint sealers at all doors and windows.

7B. Special Flooring

1. Traffic-bearing penetrating waterproof coating on floor slabs.

8.0 DOORS, WINDOWS & GLASS

8A. Metal Doors

1. Hollow metal doors with glazed lites at ground level pedestrian entrances.
2. Hollow metal frames.

8B. Special Doors

1. Overhead rolling metal grilles at vehicle entrances.

8C. Metal Windows

1. Aluminum curtain wall system as shown on elevations; custom color finish.
2. Related aluminum metalwork to match window system.

8D. Glass and Glazing

1. Single pane float plate glass; tempered where required by code.
2. Glass block at ground level stair enclosures.

8E. Hardware

9.0 FINISHES

9A. Painting

1. Use zinc-rich painting system, or equivalent, on all metalwork.
2. Color selection from manufacturer's custom colors.
3. Paint all exposed structural steel.
4. Paint all hollow metal.
5. Paint all exposed miscellaneous metal stairs, railings, etc.
6. Paint exposed CMU in stair enclosures.

10.0 SPECIALTIES

10A. Identifying Devices

1. Painted and/or applied-letter metal signs.

10B. Miscellaneous Equipment

1. Parking meters.

15.0 MECHANICAL

15A. Plumbing

1. Floor drains and piping.

16.0 ELECTRICAL

16A. Electrical

1. High pressure sodium lighting throughout interior areas (mercury vapor or h.p. sodium in stair enclosures).
2. Mercury vapor or h.p. sodium at building exterior:
 - a. Decorative fixtures on perimeter walls and at entrances.
 - b. Shielded fixtures on 12' standards at roof parking area, and on 16' standards at adjacent exterior surface parking areas.

Cost Estimate

Proest

PROJECT: AMHERST PARKING STUDY
 LOCATION: AMHERST, MASSACHUSETTS
 ARCHITECT: ARROWSTREET INC.
 SUMMARY BY: DC

CVS/LOUIS SITE
 =====

ESTIMATE # :
 SHEET NO.:
 DATE: 1-30-90
 CHECKED BY:

PRICES BY: DC

DESCRIPTION	QTY	UNIT	U.P.	EXTENSION
ARCHITECTURAL AREA			COST/SF	85,770
ESTIMATE SUMMARY				
DEMOLITION			0.00	\$0
SITEWORK			1.24	\$106,391
FOUNDATIONS			2.01	\$172,821
SUPERSTRUCTURE			13.37	\$1,146,417
EXTERIOR WALL			4.45	\$381,539
MISCELLANEOUS METAL			1.04	\$89,000
CARPENTRY			0.02	\$2,000
MOISTURE PROTECTION			2.02	\$173,200
DOORS/FRAMES/HARDWARE			0.01	\$1,200
INTERIOR WALLS			0.00	\$0
FINISHES			0.30	\$26,000
SPECIALITIES			0.02	\$1,800
EQUIPMENT & FURNISHINGS			0.88	\$75,300
VERTICAL TRANSPORTATION			0.00	\$0
FIRE PROTECTION			0.00	\$0
PLUMBING			0.50	\$42,885
H.V.A.C.			0.00	\$0
ELECTRICAL			1.50	\$128,655
6.50%GENERAL CONDITIONS			1.78	\$152,569
5.00%CONTINGENCY			1.46	\$124,989
TRADE CONTRACTOR TOTAL			30.60	\$2,624,765
5.00%GENERAL CONTRACTOR FEE				\$131,238
BUILDING PERMIT				NIC
PAYMENT & PERFORMANCE BOND				\$20,500
TOTAL ESTIMATE			32.37	\$2,776,504
251 CARS	COST PER CAR	\$11,062		
342 S.F. PER CAR				
OTHER SITEWORK COSTS TO BE ADDED				\$135,002
=====				=====

PROJECT: AMHERST PARKING STUDY
 LOCATION: AMHERST, MASSACHUSETTS
 ARCHITECT: ARROWSTREET INC.
 SUMMARY BY: DC

CVS/LOUIS SITE

=====

PRICES BY: DC

ESTIMATE # :

SHEET NO.:

DATE: 1-30-90

CHECKED BY:

DESCRIPTION	QTY	UNIT	U.P.	EXTENSION
CVS/LOUIS SITE =====				
TOTAL ARCHITECTURAL AREA	85,770	GSF		
ON GRADE AREA	24,490	GSF		
STRUCTURED AREA	61,280	GSF		
DEMOLITION			0.00	\$0
No Work Required				
SITework			1.24	\$106,391
Site Preparation and Rough Grading	5,063	sy	5.50	\$27,848
Bulk Building Excavation	2,670	cy	6.00	\$16,020
Footing Excavation & Backfill	600	cy	8.00	\$4,800
Gravel Under Slab On Grade	911	cy	13.00	\$11,843
Site Utilities - ALLOWANCE	1	ls	15,000	\$15,000
Concrete Sidewalks @ Streets	1,360	sf	2.50	\$3,400
Bituminous Pavement @ Surface Parking	9,400	sf	1.00	OTHER SITEWORK
Precast Concrete Curbing	670	lf	16.00	OTHER SITEWORK
Landscaping & Site Improv.(W/in Property Line)	1	ls	15,000	\$15,000
Rock & Ledge Excavation				NOT INCLUDED
Underground Obstructions				NOT INCLUDED
Relocate Existing Underground Utilities				NOT INCLUDED
Precast Concrete Pavers @ Walks W/in Site P.L.	1,560	sf	8.00	\$12,480
FOUNDATIONS			2.01	\$172,821
Spread Footings for Columns (Assume 6 kip soil)	389	cy	200.00	\$77,778
Continuous Footings	97	cy	220.00	\$21,413
Foundation Walls & Ramp Wall @ Lower Level	210	cy	350.00	\$73,630

PROJECT: AMHERST PARKING STUDY
 LOCATION: AMHERST, MASSACHUSETTS
 ARCHITECT: ARROWSTREET INC.
 SUMMARY BY: DC

CVS/LOUIS SITE
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PRICES BY: DC

DESCRIPTION	QTY	UNIT	U.P.	EXTENSION
SUPERSTRUCTURE			13.37	\$1,146,417
Concrete Slab on Grade (5" Thick)	24,490	sf	2.50	\$61,225
Structural Steel Columns & Beams @ 13#/sf	398	ton	1,500.00	\$597,480
Paint Structural Steel w/Rust Inhibitive System	398	ton	200.00	\$79,664
6" Concrete Slab w/Epoxy Coated Rebar	61,280	sf	6.60	\$404,448
C.I.P. Concrete Curbs & Walkways	1,200	sf	3.00	\$3,600
EXTERIOR WALL			4.45	\$381,539
Brick Veneer Spandrels - Moderately Articulated	2,937	sf	15.00	\$44,055
8" CMU Back-up Wall @ Spandrels	2,937	sf	8.00	\$23,496
Brick Piers w/CMU Back-up @ Ground Level	504	sf	22.00	\$11,088
Brick Column Covers w/CMU Back-up	7,040	sf	25.00	\$176,000
Metal Rails	1,410	lf	75.00	\$105,750
Precast Sills	1,410	lf	15.00	\$21,150
MISCELLANEOUS METALS			1.04	\$89,000
Fire Stairs	6	flt	6,500.00	\$39,000
Steel Channel Brick Shelf @ Spandrels	22,000	lb	1.00	\$22,000
Railing @ Interior Ramps @ Center Column Line	560	lf	50.00	\$28,000

PROJECT: AMHERST PARKING STUDY
 LOCATION: AMHERST, MASSACHUSETTS
 ARCHITECT: ARROWSTREET INC.
 SUMMARY BY: DC

CVS/LOUIS SITE

=====

PRICES BY: DC

ESTIMATE # :

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DATE: 1-30-90

CHECKED BY:

DESCRIPTION	QTY	UNIT	U.P.	EXTENSION
<u>CARPENTRY</u>			0.02	\$2,000
Miscellaneous Wood Blocking @ Roofs	1	ls	2,000.00	\$2,000
<u>MOISTURE PROTECTION</u>			2.02	\$173,200
Traffic-bearing Membrane on Elevated Slabs	61,280	sf	2.50	\$153,200
Metal Roof System @ Stair Towers	800	sf	25.00	\$20,000
<u>DOORS/FRAMES/HARDWARE</u>			0.01	\$1,200
Stairwell Doors	2	ea	600.00	\$1,200
<u>INTERIOR WALLS</u>			0.00	\$0
No Work Required				

PROJECT: AMHERST PARKING STUDY
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CVS/LOUIS SITE

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PRICES BY: DC

ESTIMATE # :

SHEET NO.:

DATE: 1-30-90

CHECKED BY:

DESCRIPTION	QTY	UNIT	U.P.	EXTENSION
FINISHES			0.30	\$26,000
Paint Stairwell Walls & Misc Items	1	ls	10,000	\$10,000
Paint Stairs	6	flt	1,000.00	\$6,000
Graphics/Signage	1	ls	10,000	\$10,000
SPECIALITIES			0.02	\$1,800
Fire Extinguishers	6	ea	300.00	\$1,800
EQUIPMENT			0.88	\$75,300
Parking Meters	251	ea	300.00	\$75,300
VERTICAL TRANSPORTATION			0.00	\$0
Not Required				

PROJECT: AMHERST PARKING STUDY
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 ARCHITECT: ARROWSTREET INC.
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CVS/LOUIS SITE
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ESTIMATE # :
 SHEET NO. :
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PRICES BY: DC

DESCRIPTION	QTY	UNIT	U.P.	EXTENSION
FIRE PROTECTION			0.00	\$0
Not Required				
PLUMBING			0.50	\$42,885
Floor Drains & Piping	85,770	sf	0.50	\$42,885
H.V.A.C.			0.00	\$0
Not Required				
ELECTRICAL			1.50	\$128,655
Lighting & Fire Alarm System	85,770	sf	1.50	\$128,655
OTHER SITEWORK				\$135,002
Additional Landscaping Beyond Base Allowance	1	ls	70,000	\$70,000
Cost of Surface Parking:				
Bituminous Paving @ Surface Parking	9,400	sf	1.00	\$9,400
Precast Concrete Curbing	670	lf	16.00	\$10,720
Sitework @ Entry Road & Surface Parking:				
(For work outside of site property line)				
Site Prep & Rough Grading	1,477	sy	5.50	\$8,122
Bituminous Paving @ Surface Parking	11,990	sf	1.00	\$11,990
Precast Concrete Curbing	720	lf	16.00	\$11,520
Concrete Walks - CIP	1,300	sf	2.50	\$3,250
Plantings & Landscaping	1	ls	10,000	\$10,000

**Financial
Feasibility Study**

Legatt-McCall Advisors

**AMHERST PARKING GARAGE
FEASIBILITY STUDY**

**Prepared For:
Town of Amherst**

**Prepared By:
Leggat McCall Advisors, Inc.**

January, 1989

#7284.1

Leggat McCall Advisors, Inc.

An Affiliate of The Leggat McCall Companies

RICHARD E. BONZ
PRESIDENT

January 27, 1989
#7284.1

Mr. Jim Batchelor
Arrowstreet, Inc.
14 Arrow Street
Cambridge, MA 02138


Dear Jim:

In accordance with our contract we have prepared the parking garage feasibility study for the Town of Amherst enclosed herewith. Our major conclusions are summarized in the first section, while the data and analyses are presented in the latter sections of the report.

We sincerely appreciate the opportunity to be of service. Should you have any questions, please don't hesitate to call.

Very truly yours,

LEGGAT McCALL ADVISORS, INC.



Richard E. Bonz, CRE
President

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AMHERST PARKING GARAGE

The purpose to this memorandum is to summarize the likely financial feasibility of the proposed parking garage in downtown Amherst. The Town of Amherst is considering building the garage on one of three potential sites: the CVS lot, the Boltwood lot, and the Amity lot. Leggat McCall Advisors (LMA), as subconsultant to Arrowstreet Architects, has been asked to determine the feasibility of this parking garage.

Organization of Report

This LMA study consists of three parts. The first part is an evaluation of existing conditions followed by a strategy for a parking management plan. The next part reviews the garage feasibility and addresses the development costs, operating expenses, and potential financing sources for garage development. The final part suggests the steps Amherst might take in addressing its parking problem with the aim of garage development.

Major Conclusions

- Downtown Amherst currently has some 1,094 parking spaces of which 27% are in metered public lots, 33.5% are in unmetered public lots, 16.5% are on-street spaces with meters, and 23% are on-street spaces without meters.
- In the public lots, 126 of the meters are for short-term parkers (duration of one hour or less).
- The downtown parking spaces appear to have an average occupancy or utilization of 85% at posted fees of \$.10 per hour.
- A spot check of metered spaces indicates extensive long term and illegal parking in spaces which are appropriate for short-term parkers.

- The downtown's 100,000 square feet of office and 180,000 square feet of retail space create significant demands for both long and short term parking. In addition, there appears to be extensive student parking in the downtown in order to avoid parking fees at the University.
- Notwithstanding the apparent demand for parking, the existing public parking organization, enforcement, and rate structure seriously undermine the Town's ability to develop a public parking garage on an economically viable basis.
- Thus before undertaking the development of a public parking garage, we recommend that the Town formulate and implement a parking management plan which will:
 - 1) raise parking revenues by enforcing proper lot utilization and by increasing parking rates;
 - 2) separate short-term and long term parking to provide for efficient parking for retail shoppers as well as downtown employees;
 - 3) designate certain residential streets as sticker parking for "Residents Only" to preclude non-resident long term parkers from avoiding parking fees.
- The economic feasibility of a parking garage in the downtown depends on:
 - 1) raising all parking rates to the level necessary to support the garage;
 - 2) establishing an efficient operating mechanism for the garage;
 - 3) obtaining a state grant or other non-reimbursable funding source for a significant portion of the cost, since likely garage parking revenues

will provide little net income after operating expenses to cover debt.

- Specifically, the likely cost of a 240-car parking garage, exclusive of land acquisition, will be approximately \$3.3 to \$3.4 million.
 - Parking revenues at \$.25 per hour and \$30 per month will likely produce \$75,335 annually in gross income after vacancy loss.
 - Operating costs are likely to be \$44,500 per year even with the spaces being metered.
 - The resultant net income of \$30,835 is only sufficient to fund debt of \$216,000 using a revenue bond with debt service coverage at 1.50 times and a bond rate of 9.5%.
- Therefore, grants for construction and site acquisition must be sought and outside sources of revenue must be found to support additional borrowed monies.
 - Limited State funds are available to support 75% of garage development costs.
 - Additional sources of revenue could include the increased meter revenues throughout the downtown which could generate an estimated \$200,000 annually assuming public lots and meters adopted the same fee structure as the garage. Were all of these revenues applied to the garage, they would support debt of \$1.4 million allowing coverage ratio of 1.50 times and a rate of 9.5%.

- The inclusion of limited retail in a well-located garage could provide additional revenue, but would generate additional parking demands.
- Fees-in-lieu of parking generally work only in areas which are the focus of new development and are thus not likely to generate needed funds.
- Betterment assessments are possible, but are generally highly unpopular unless there is strong support by property owners and tenants for the facility.
- Notwithstanding alternative financing services, strong consideration should be given to financing the Town's portion of the garage with General Obligation Bonds due to the lower issuing cost, lower debt service, and greater funding availability.

The balance of the memorandum details the analysis and findings.

EXISTING CONDITIONS

The downtown Amherst parking area is bounded by College Street to the south, North and South Prospect Streets to the west, the intersection of Triangle and East Pleasant Streets to the north, and Churchill Avenue to the east.

Parking demand in Amherst is generated primarily by commercial uses, both retail and office. In downtown Amherst, there are approximately 180,000 square feet of retail space and 100,000 square feet of office space. Typical minimum parking ratios average 4.0-plus spaces per 1,000 square feet of retail and 2.5-plus spaces per 1,000 square feet of office after allowing for parking overlaps. The inclusion of restaurants and banks would increase the demand. Under ideal circumstances, some 1,100 to 1,200 spaces would be desirable, but due to the fragmentation of lots, additional spaces would be required. As the parking ratios indicate, the bulk of the parking demand stems from retail use consisting of shoppers, restaurant patrons and employees.

Another use adding significantly to parking demand is non-commercial. The surrounding residences and the two schools; University of Massachusetts and Amherst College contribute substantial residential and student parking demand in the downtown area.

Supply

Parking supply analysis is based upon a parking survey conducted by the Town of Amherst over a two week period from March 25, 1988 to April 4, 1988. The survey provided the total count of parking spaces in the downtown area which shows a total of 1,094 publicly accessible parking spaces; 477 metered and 617

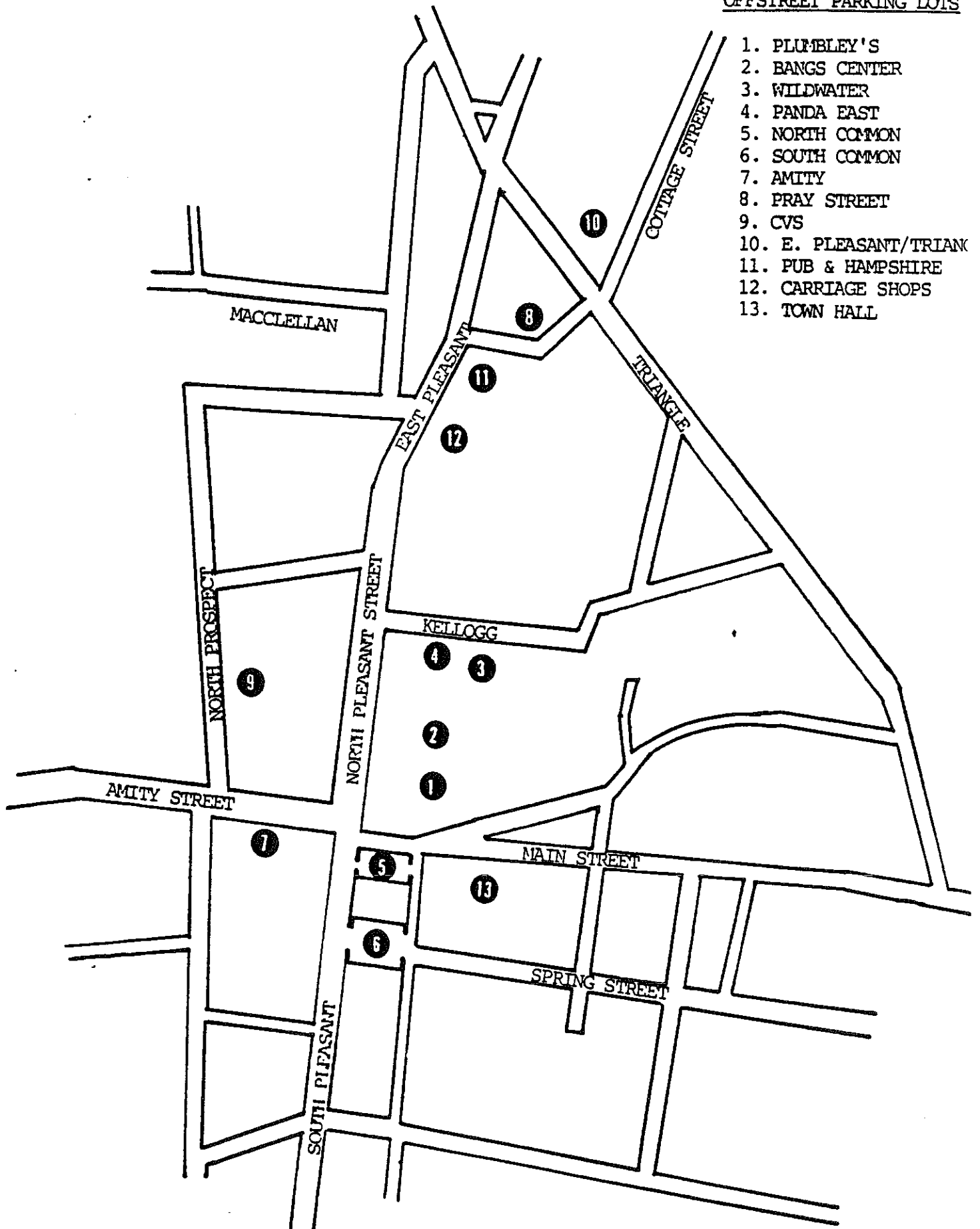
unmetered.

The off-street spaces are distributed among the following 13 lots:

OFFSTREET PARKING

Metered Lots		Number of Spaces						
Zone	Name	Total	1 hr	2 hr	5 hr	9 hr	Handi.	Unmarked
1. B-G	Plumley's	66	10	14	19	19	1	3
2. B-G	Bangs Center	10	2	8				
3. B-G	Wildwater	19		16	1		2	
4. B-G	Panda East	15	12		3			
5. B-G	North Common	38	38					
6. B-G/B-L	South Common	31	31					
7. B-L	Amity	37	33					4
8. B-G	Pray Street	81			13	19		49
	Subtotal	297	126	38	36	38	3	56
Zone	Unmetered Lots	Total						
9. B-G	CVS Lot	125						
10. B-L	E. Pleasant/Tri.	115						
11. B-G	Pub & Hampshire	67						
12. B-G	Carriage Shops	35						
13. B-G	Town Hall	24						
	Subtotal	366						

TOWN OF AMHERST
OFFSTREET PARKING LOTS



ONSTREET PARKING

Metered Streets		Number of Spaces					
Zone	Street Name	Total	1 hr	2 hr	5 hr	9 hr	Handl. Unmarked
B-G	North Pleasant	50	50 *				
B-G	Amity	12	12				
B-G	Main	41	41				
B-G	Boltwood	9	9				
B-G	South Pleasant	21	21				
B-L	North Pleasant	11	11				
R-G	North Pleasant	7	7				
R-G	North Prospect	5	5				
R-G	South Pleasant	12	12				
R-G	South Prospect	0					
R-G	Amity	0					
R-G	Boltwood	0					
R-G	Sellen	12	8		3	1	
	Subtotal	180	176	0	3	1	0

* Includes three 12 minute meters

Zone	Unmetered Streets	Total
R-G	North Pleasant	24
R-G	North Prospect	44
R-G	South Prospect	38
R-G	Amity	37
R-G	Boltwood	36
B-L/R-G	Hallock	23
R-G	Churchill	33
B-L/R-G	MacClellan	16
	Subtotal	251
TOTAL METERED		477
TOTAL UNMETERED		617
GRAND TOTAL		1094

Demand

Parking demand depends on two factors; occupancy and turnover. Occupancy refers to the rate at which a parking lot or facility is occupied (i.e. the number of occupied spaces divided by the total number of parking spaces). This rate is expressed for certain time periods whether hourly, daily, or monthly. By comparing the number of occupied spaces with the number of total spaces at periodic times throughout the day, the level of peak occupancy can be determined.

The peak occupancy was determined based upon Town data for seven parking lots. Using these 7 off-street lots as a sample, the average peak occupancy has been estimated at 85% for the other off-street lots. Assuming that the on-street spaces have a slightly higher peak occupancy, the average peak occupancy for the total inventory is most likely about 87%. However, average occupancy based on town data including both peak and off peak times is lower. The following table summarizes average occupancy over the period from 8 AM to 6 PM.

CVS Lot	81%	Fri 11-12 PM
East Pleasant/ Triangle	82%	Weds 12-1 PM
Pray Street	94%	Weds/Fri 12-1, 4-5 PM
Pub & Hampshire	90%	Weds 12-1 PM
Plumley's	106%	Sat 12-1 PM
Amity	73%	Fri 4-5 PM
Carriage Shops	87%	Weds 12-1 PM

The Town data indicates that the average parking occupancy for the sample period was significantly less than peak occupancy. Specifically, the average weekday rates are as follows:

CVS Lot	44%
East Pleasant/ Triangle	45%
Pray Street	60%
Pub & Hampshire	48%
Plumbley's	78%
Amity	31%
Carriage Shops	45%

It should be noted that average occupancy is not an accurate measure of total parking need, due to the time demand factor and is also not a good indicator of likely revenues. Long-term parkers pay for a full period no matter how long they remain in the facility. Since short-term parkers tend to park for relatively short periods, turnover rates are a better measure of this revenue potential.

Turnover refers to the number of times a space is occupied by a different vehicle. The turnover estimate is based on parking data collected on Friday, March 25, 1988. The turnover was measured by checking license plates and that is counting the number of different vehicles that occupy a single space. This sample count indicated the following daily (9 hour) turnovers:

Carriage Shops	3.6
Pray Street	2.9
North Common	2.5
Plumbley's	2.4
South Common	2.4
Pub & Hampshire	2.2
East Pleasant/ Triangle	2.0
Town Hall	1.1

Clearly, more plate counts will be necessary to provide greater accuracy in turnover rates, however, these numbers do generally reveal the type of parker who tends to use each lot. For example, a turnover of 1.1 means that there is virtually no daily turnover (i.e. full day parker), as at the Town Hall lot, while a turnover of 3.6 at the Carriage Shops lot indicates that a parker stays an average of 2.5 hours. This data shows that both long-term and short-term parking demand must be met.

For on-street parking spaces, data was not available to determine turnover rates. However, it can be assumed that turnover rates correlate with proximity to retail. In other words, the on-street spaces on North Pleasant and Main Street are likely to have a high turnover rate (e.g. 3.5 to 4) that reflects short term use by shoppers. On the other hand, on-street spaces on MacClellan and North Prospect Streets that are next to residences most likely have a low turnover rate (e.g. 1.5 to 2) that reflects longer term use.

Fee Structure

In downtown Amherst, there is a combination of metered public parking and free parking which consists of private lots and unmetered public spaces.

Metered spaces make up 44% of the total. The remaining 66% are divided between private lots and public on-street spaces. All the metered spaces are set at the rate of 10 cents per hour with the total time allowed ranging from one hour to nine hours. The vast majority of meters, 302, are hourly. The remaining 116 meters consist of 38 2-hour meters, 39 5-hour meters and 39 9-hour meters.

Parking Management Plan

In order to make a future parking garage financially viable, the Town of Amherst needs a parking management plan. The purpose of this plan will be to raise parking revenues by enforcing proper lot usage and changing the rate structure of the meters. The overall effect will be not only to increase revenues but also to regulate the supply and demand for parking. The linchpin of the parking plan will be enforcement; regular ticketing of cars parked at expired meters. Once the Town of Amherst has a parking management plan in place, it will be able to effectively examine parking garage development. With a management plan, meter revenues can be collectively pooled and a proportion reserved to support the cost of a future parking garage.

In addition, the revenues collected from the existing meter system will need to be increased to augment parking garage revenues in order to support operational costs. Thus we recommend that the Town consider several changes in the meter system.

Parking Separation

A distinction needs to be made between short-term parking and long-term parking. We recommend focusing most of the long-term and daily parking (i.e. more than 4-hour meters) in outlying lots. Some of the other existing lots would be primarily short-term with limited long term and thus have a combination of hourly and four to five hour meters, with the longer term meters clustered in a remote area of the lots. The remaining central lots would have one and two hour meters to serve shoppers and restaurant patrons who need to park for short periods only.

Fee Structure

We recommend that a rate structures of 25 cents per hour or 10 cents for twenty minutes be adopted. This change would more than double parking revenues and establish the minimum rate levels necessary to support a parking garage. Meters should be such that the rate could be changed at a later date.

There are presently 477 metered spaces and we recommend that 125 of the unmetered on-street spaces be converted to the metered system. 602 meters at 25 cents per hour should generate more than \$200,000 in revenue annually, assuming effective enforcement and 70% occupancy.

Enforcement

Metered lots should be checked regularly so that cars parked at expired meters can be ticketed at a fine high enough to encourage compliance. Also, cars parked illegally at loading ramps or in rights of way should be ticketed. Presently, parkers are taking advantage of the lack of enforcement by parking at metered spaces without paying. For example, one spot check showed that more than half the cars at the Bangs Center lot were parked at expired meters.

Residential Spaces

About 230 un-metered parking spaces located on side streets in R-G (Residential) Zones are currently used by a combination of university-related parkers, residents, and visitors. A number of these spaces should be designated as residential spaces with signs reading "For Residents Only" and stickers should be issued to the residents. This area

would need to extend beyond the residential streets as listed in the on-street parking table. Other users who park in this designated area would be ticketed. The end result would be to keep residents on the side streets and shoppers at the more central metered spaces.

Community and Business Support

In order to be successful, the town will need the support of downtown businesses and the Chamber of Commerce. Unless the merchants, employers, and shoppers are willing to pay the long and short term rates required for the garage, the facility will not likely succeed.

Management

Presently, the three municipal agencies involved in parking are the Department of Public Works, Police, and Planning. To coordinate the parking management, we recommend that one person be responsible for the management of all parking related matters, parking enforcement, fee structures, maintenance, repair, signage, etc. This person could also serve as a liason to community and business groups to build a consensus for the emerging parking management plan.

GARAGE FEASIBILITY

A feasibility analysis relates the potential net revenues of the garage operation to the cost of financing garage development. The goal is for projected net revenues (receipts less operating costs) to balance estimated costs. To determine likely revenues, it is necessary to look at the effective parking demand, i.e. the parkers ability to pay and more importantly, the elasticity of parking demand. In other words, if the price of parking were increased, would there still be demand for parking or would parkers be more inclined to find the remaining free parking spaces in outlying areas. With a parking management plan, the Town of Amherst could respond to these changes in parking choices by adjusting meters.

According to Arrowstreet's schematic designs, the size of the garage that the three potential sites; CVS, Amity, and Boltwood could easily accommodate would be on three levels and contain 240 spaces. Two levels would be above grade and one level would be partially below grade. For the purposes of this feasibility study, we will use 240 as the total number of parking spaces.

Potential Gross Income

A stable source of revenue is needed to support the operating expenses of the garage. This source is most reliably found in the sale of monthly passes or stickers to employees/employers, who need parking for at least 20 days out of the month. We have assumed that employees/employers would buy passes at \$30.00 per month for 30% of the spaces (72 spaces) based upon the numbers of long term parkers in the downtown. The rate is some 20% below the monthly rate in the Northampton garage. Not all long term parkers will purchase monthly parking and

we have estimated that another 84 spaces would be used by long-term parkers who do not buy passes. The remaining 84 spaces would be for short-term parkers who, based upon actual turnover rates, are likely to stay an average of two hours, paying the hourly rate of 25 cents. The turnover rate of 2.5 for short-term parkers is based on the Town of Amherst's parking data.

At these rates, \$26,250 of revenue would be generated by short-term parkers, \$25,920 would be generated by the sale of monthly passes and \$42,000 would be collected annually from daily parkers. Thus the annual potential gross income of the garage would be \$94,170.

Vacancy Loss and Effective Gross Income

We have allowed for a 20% vacancy of the facility. This allowance provides for losses from long-term parkers — both monthly and daily as well as a loss in turnover from hourly parkers. The 80% utilization is below peak level rates, but significantly above average utilization rates in existing lots. The allowance of a 20% vacancy loss produces an effective gross income (actual collection) of \$75,336.

Operating Costs

Using the City of Northampton's new parking garage as a comparable and a survey by the National Parking Association Parking Consultants, we estimate the annual operating expenses for the garage to be \$185 per space. These expenses can be broken down into four categories: operations, building maintenance and repair, HVAC/Utilities, and building insurance. 40.5% of the expenses, or \$75 per space are estimated for garage operations. This amounts to one salaried employee at \$18,000. The remaining 59.5% consists of 27% for HVAC/Utilities, 24.5% for

building maintenance/repair and 8% for building insurance. For a 240 space garage spaces, total annual operating expenses would be \$44,400.

Net Revenues

To arrive at net operating income, the operating expenses of \$44,400 must be deducted from the estimated collections of \$75,336. The resulting net revenue of \$30,836 is the amount available to service construction costs and debt.

Construction Costs

Arrowstreet Architects has estimated a construction cost averaging \$10,500 per space for a three level garage, with one level below grade. This figure is consistent with our experience after adjusting for locational differences. The construction costs cover only "turnkey construction" of the structure and additional costs should be allowed for equipment, extra landscaping and soft costs including construction financing, working capital, development, architectural, and engineering fees. Depending upon the method and amount of financing a 240 space garage would cost in the range of \$3.3 to \$3.4 million. This amount is summarized in the following table and does not include land acquisition cost.

The next step is to relate construction costs and net operating revenue to identify the likely "gap". The easiest method is to identify the amount of cost which the operating revenue of \$30,836 would support. A revenue bond lender would likely require a coverage ratio of 1.5 times to protect the bond holders. This means that the net operating revenue must be 1.5 times the debt service.

The financial calculation thus shows maximum debt service of \$20,557. At a likely 9.0% interest rate and 20-year amortization the maximum borrowed funds

supported by operating revenues are some \$190,000. It should be noted that after parking debt, the parking garage would still have revenue of \$19,280 which could be held and accumulated in a reserve fund for unexpected expenses or to pre-pay debt.

The financing available covers only \$190,000 of the development cost, excluding land costs. Thus there is a gap of some \$3.1 million to fund.

There are several possible options:

- State Parking Garage funding grant;
- General parking revenues;
- Addition of retail component to generate additional revenues;
- Use of general obligation funding (i.e., tax payer funding);
- Betterment assessment to downtown property owners.
- Charge of fees in lieu of providing parking to developers.

These are discussed in the following paragraphs.

State Funding

Massachusetts state funding is available for up to 75% of the development cost. In order to qualify for state funding, the Town must have a current CARD (Commercial Area Revitalization District) designation. Amherst needs to renew its CARD designation and commission a parking study which substantiates the need for a parking garage. It is also likely that a parking management plan would need to be implemented.

**ESTIMATED DEVELOPMENT COSTS
240 SPACE PARKING STRUCTURE
AMHERST, MASSACHUSETTS**

Predevelopment					
Architecture and Engineering	75.0% of	6.5% of Constr.	\$127,500		
Traffic and Parking			\$17,500		
Legal			\$7,500		
Other			\$5,000		
			<u> </u>		
Subtotal				\$157,500	\$118,1
Construction					
Parking Structure	\$10,500 per Space		\$2,520,000		
Equipment/Meters	\$275 per Space		\$66,000		
Special Site Conditions			N/A		
Landscaping	\$125 per Space		\$30,000		
Off-site Improvements			N/A		
			<u> </u>		
Subtotal				\$2,616,000	\$1,962,0
Development Related					
Development Management	2.5% of Construction		\$65,400		
Design Supervision	25.0% of	6.5% of Constr.	\$42,500		
Insurance	\$1.25 per	\$1,000 Annually	\$4,000		
Title Insurance	\$1.10 per	\$1,000	\$4,500		
Legal/Audit			\$25,000		
Other			\$10,000		
			<u> </u>		
Subtotal		354527.783		\$151,400	\$113,1
Financing	\$1,100,000	9.00% Interest	20 Years		
Bond Underwriting/Placement		Estimated at	\$125,000		
Appraisal			\$15,000		
Loss Reserve		50.0% of Debt Service	\$59,382		
Construction Interest		9.00% Interest			
Predevelopment		\$157,500	\$14,175		
Construction		\$2,616,000	\$117,720		
Development Related		\$151,400	\$6,813		
Financing		\$365,286	\$16,438		
			<u> </u>		
Subtotal				\$354,528	
Total Cost				<u>\$3,279,428</u>	<u>\$2,193,</u>
			Rounded to:	\$3,280,000	\$2,195,

The Massachusetts Executive Office of Administration and Finance issued a \$3 billion Traffic and Transportation bond bill which included \$48 million for offstreet parking. At this point, some money remains but most is committed with many town applications pending. As discretionary money is authorized through the state legislature, it is difficult to predict when more money will become available.

At 75% of development costs, the state would fund up to \$2.2 million plus 75% of land acquisition costs.

The combination of \$2.2 million in state funding and \$190,000 in bond financing would still leave a gap of \$900,000 plus 25% of site acquisition costs, assuming revenue bond financing.

Parking Fees

The re-metering and enforcement of existing parking areas would result in future parking revenues of some \$200,000 annually. A portion of these monies could be used to cover the gap, assuming that state funding is available. The annual amount needed to fund the \$900,000 gap would be less than 50% of the total fees, leaving the balance for maintenance of parking lots, payment of meters, etc.

Alternatively, the Town could likely raise some \$1.24 million from these funds to contribute to development costs assuming a 9%, 20 year revenue bond with 1.5 coverage ratio.

In addition the Town would have some \$67,000 available annually after paying the debt service on the \$1.24 million bond. The combination of the \$1.24 million for general parking revenues and the \$190,000 in bonds produces a total of some

\$1.43 million in funding resulting in a gap of \$1.66 million between construction costs and available funding from revenue bonds.

General Obligation Bonds

General obligation bonds would command a lower rate than revenue bonds and no coverage ratio would be applied. Thus if the Town took the \$30,835 in projected parking garage revenue plus the \$200,000 in meter revenue into the general revenues and used these funds to pay the debt for additional general obligation bonds, the Town could fund the approximately two-thirds of the development costs, assuming a 8.25% bond rate with a 20 year amortization. The risks would be that the tax-payers would be fully liable to pay the debt if the parking revenues were insufficient.

Betterment Districts

It is possible to assess property owners who benefit from a public betterment. This approach is usually used for sidewalk or similar improvements. However, depending upon state law, it may be possible to charge the downtown property owners a betterment assessment for a portion of the garage cost.

Generally, such charges are highly unpopular unless those property owners strongly desire the improvement. The major problem is to define who benefits and include that group in the betterment assessment. Those peripherally involved are likely to challenge the assessment in court.

In Lieu Parking Fees

Some jurisdictions have enacted an ordinance to enable developers who build new projects to pay a fee in lieu of building the requisite parking. Fees usually cover the jurisdiction's cost to build the parking. This approach works in

areas with extensive new development where the municipality and developers prefer to have centralized parking. Due to the lack of development sites in the downtown area, we judge this approach to be inappropriate.

Retail Subsidy

The final alternative would involve including a retail component of less than 10% of the total area as a means of generating revenue. This approach would only be appropriate for a garage which has frontage on a major retail area. Assuming a 240-car garage, the maximum retail space would be approximately 9,000 square feet. With an average net rent of \$10 per square foot and a cost of \$65 per square foot, the retail would contribute some \$180,000 toward reducing capital costs. However, 9,000 square feet of additional retail would generate a parking demand for some 35 parking spaces, depending upon the retail use.

Summary

The likely development costs for the garage would be some \$3.3 to \$3.4 million exclusive of land. The revenue from the garage would only support some \$190,000 using revenue bonds. Thus, a large gap is likely to exist. A state grant of \$2.2 for garage construction could reduce the gap by some \$900,000. The use of a portion of other parking revenues could eliminate the remaining gap. The state funding would also cover 45% of site acquisition and the balance could be funded by tapping the remaining parking revenues.

In the event state funding is not available, the likely alternatives would be to use general obligation bonds and apply the parking garage revenues and general parking lot revenues toward the debt. These revenues are likely to cover only two-thirds of the development costs at a 8.25% interest rate and 20 year

obligation.

Retail might be used to offset capital costs. Depending upon the location, up to \$190,000 of capital costs might be offset by the value created by 9,000 square feet of retail.

The other usual approaches — a betterment district or in lieu changes — are not recommended.

Notwithstanding the financing mechanism considered, a parking management system consisting of redesignating public lots, restructuring time limits, rate increases, and strong enforcement will be essential before a parking garage would be financially feasible.

Two examples of in lieu payments are found in Norwalk, Connecticut and Northampton, Massachusetts. In Norwalk, the in lieu payment is \$10,000 per space, which is the estimated cost of providing off-site parking. Although the program has been in effect since February, 1987, only a limited number (3 or 4 developers) have taken advantage of the program. Most developers believe that it is in their best interest to provide on-site parking. The program is available only for developers of sites in Norwalk's Business District, where it makes most sense to centralize the City's parking facilities.

In Northampton, the program has been in existence since 1984. As in Norwalk, the in lieu program applies only to the downtown Business District. Developers may apply to the Planning Board if they so choose and make in lieu payments of \$11,000 per space. Four developers have taken advantage of this program, contributing in lieu payments for between one and five spaces each. The funds have been pooled by the Town of Northampton for future use to provide a satellite parking lot or a decked parking facility over an existing municipal lot.

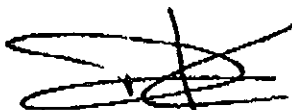
It is my belief that where the combination of land prices, parking costs, and development values warrant, in lieu payments for parking make a great deal of sense not only to the community but also to its developers.

I hope that this letter answers the questions raised.

Best Wishes.

Very truly,

LEGGAT McCALL ADVISOR, INC.

A handwritten signature in black ink, appearing to read 'Richard E. Bonz', with a long horizontal line extending to the right.

Richard E. Bonz, CRE
President

Traffic Study

Abend Associates

TECHNICAL MEMORANDUM

To: James Batchelor

From: Michael Abend

Date: December 12, 1988

SUBJECT: TRAFFIC INPUTS, AMHERST GARAGE STUDY

This memorandum summarize the inputs from Abend Associates relative to the decision of where to locate a garage in downtown Amherst. The public "charrette" I attended was not only informative but it was also a good opportunity to discuss relevant traffic issues one-to-one with the residents who attended.

Four points should be kept in mind as you proceed with site selection:

1. The potential for changing existing traffic patterns should be explored in considering access alternatives to and from each of the sites. During discussions prior to the charrette no consideration was given to changing the traffic circulation along the area roadways. At the charrette some of the small groups discussed changes quite nonchalantly and it was then that I realized it was 'fair game'.

Two-way traffic on portions of North or South Prospect Streets, depending on the site chosen, to allow access and egress to and from Amity Street was a recommendation I heard from at least one group, and it has some merit. Also considered were changes in the circulation within the neighborhood behind the CVS lot. Traffic along Boltwood Walk was discussed in pre-charrette meetings and should still be reviewed. This factor is relevant in selecting a site and a garage scheme where access and egress are important issues.

2. Many of the participants at the charrette spent much energy anticipating how to keep pedestrians and vehicular traffic from crossing. While this is a desirable goal, it should not be allowed to carry as much weight as it apparently does. Amherst is not downtown Boston or New York where traffic and pedestrian flows are so great that conflicts between them are cause for primary concern. Most pedestrians in the Amherst downtown area reach the area via automobile. This tends to make pedestrians aware of the vehicles around them. This is often not the case in larger downtown areas where a high percentage of pedestrians do not use automobiles. In addition, the volumes of conflicts is not as significant as within an urban setting.

The Amherst business district has a relatively high number of pedestrians and the volumes are enough to keep them in mind, as designs for the access and egress routes to each site are considered. However, it is not a point that should drive the decision process, with one exception: the access for elderly pedestrians across Boltwood Walk. The elderly pedestrians live within the area and are not as agile as the younger college students who dominate the pedestrian population. Boltwood Walk is in essence a 'backyard' for these elderly residents and their needs to easily access the businesses along Main and North Pleasant Streets should be given consideration.

3. A sound and integrated parking management plan must be part of the parking solution in the business area. Without such a plan a new garage may not even be noticed. It has not been fully documented that the existing supply is insufficient to handle existing demand. The available data is inconclusive insofar as the overall demand is concerned since the parking is not centrally controlled. If the parking could be centrally managed, and if some of the parking areas that are adjacent to each other could be consolidated, the parking supply could be

increased moderately and the parking supply and demand balance could be established possibly without a new garage. With a garage the need for a management program is still great.

Such a management program includes strict enforcement, as well as fees and fines that are appropriate deterrents in order to encourage adherence to parking regulations. This is likely to result in increased parking charges overall -- something that is logical given the existing parking demand. The fees and fines should be structured so that they provide the funds necessary to maintain the parking infrastructure (restriping lots as necessary, maintaining meters, paying of enforcement personnel, etc.) in the downtown area.

4. An important consideration that was not kept in mind by any of the groups was the typical pattern of parking space searching that is done in a business district. Usually a driver will look for a space in the area closest to his/her destination and then circulate outward so that the closest possible space is found. For Amherst, this relevant area is the one block section of North Pleasant Street, just north of the intersection at Amity and Main Streets. This consideration is important in reducing traffic flow in the area as drivers traverse the area in search of a space. If a space is found quickly then shopping in the area is perceived as less difficult and inviting, while a difficult time parking will lead shoppers to consider shopping along the outside edges of the area only.

Corollary to this is the impact a garage will have on the downtown geography. The location of the garage will influence the development direction the area takes. If the site south of Amity Street is selected for development, it is likely that there will be a slight southerly shift in shopping patterns.

The same argument can be applied to the other sites except that the other site will likely reinforce the strength of the center of the business district, something that may or may not be desirable.

Attached are the traffic turning movement counts and twenty-four-hour tube counts that were conducted as part of the contract. As we discussed in our meetings, I do not anticipate that any of the potential garage locations will adversely affect any of the count locations. Although no explicit review has been done regarding possible changes to the circulation pattern of the downtown streets in conjunction with a garage design, I do not foresee these circulation changes negatively impacting the counted locations insofar as Level of Service is concerned.

It has been a pleasure working with you and the town's representatives and residents on this project. The citizen input on this project could be a model for other communities. Please call me if there are any questions that have been left unaddressed.

Appendix:

Site Analysis
Amity Street

SITE ANALYSIS:

I. AMITY STREET SITE

Site Analysis

This site is located on Amity Street at the corner of South Prospect Street, in a Limited Commercial zone. The site consists of four parcels, only one of which is currently owned by the town. Its main use currently is a surface parking lot but also includes a single detached residence. It is the most exposed site of the three being considered, as it is a corner lot. There is a slight downward slope toward the south and west of the lot.

The architectural boundaries of the site are the Jones Library, the Amherst Cinema, and the detached residential structures on and to the west of the site. While Amherst Cinema, with little or no setback, maintains "downtown" characteristics and use, the other structures have considerable setback from their property lines on all sides, thereby taking on residential characteristics; uses, however, are a mix including business and rental activities.

A. Recommended Scheme A

One recommended scheme for this site is a narrow fronted garage using only the eastern half of the site. The facade would be approximately 120'-0" wide along Amity Street, with limited commercial development at street level, and $\pm 250'$ -0" deep. It is illustrated in the Appendix "AMITY STREET SITE: Option One."

1. Access

The main entry and exit to the garage should be on Amity Street with a secondary egress on South Prospect Street. However, increasing traffic on the residential South Prospect Street is deemed undesirable. Whatever traffic problems occur as a result could be alleviated via removal of meters in the immediate area of the egress(es). (See Traffic Report)

2. Visual Impact

a. A narrower, rather than a wider street frontage generally would better maintain the scale of the town. The facade of the garage could be developed based on the parking bays within, and breaking down the scale of the structure to typical 20' facades.

b. The subsequent development of the adjacent lots (corner of Amity and South Prospect directly north and south of existing rental unit) with considerable setback from the street would continue the pattern of the adjacent residential zone.

c. If retail shops were lined along Amity Street at the ground level of the garage, the pedestrian experience would be greatly enhanced. It is the visual attraction of

the shops windows, signage, and pedestrian activity that would conceal the presence of the garage.

3. Development Potential

Retail space at the ground level of the proposed garage and the development of immediately adjacent properties would result in the extension of the commercial area further west along Amity Street towards South Prospect Street. Storefronts along Amity Street as part of the garage, and detached structures on the western half of the site would be a better transition into the adjacent Residential Zone than the existing surface parking lot.

B. Recommended Scheme B

An alternative scheme for this site is a garage situated on the southern half of the site. The facade would be approximately $\pm 200'-0''$ wide, and $120'-0''$ deep, with a $\pm 100'-0''$ setback from Amity Street. In this scheme, other appropriate private development would occur independently on the northern half along Amity Street. (This scheme is not illustrated.)

1. Access

The main entry and exit to the garage should be on Amity Street, directly adjacent to the Cinema, with a secondary egress on South Prospect Street. This flow would be similar to that of Scheme A.

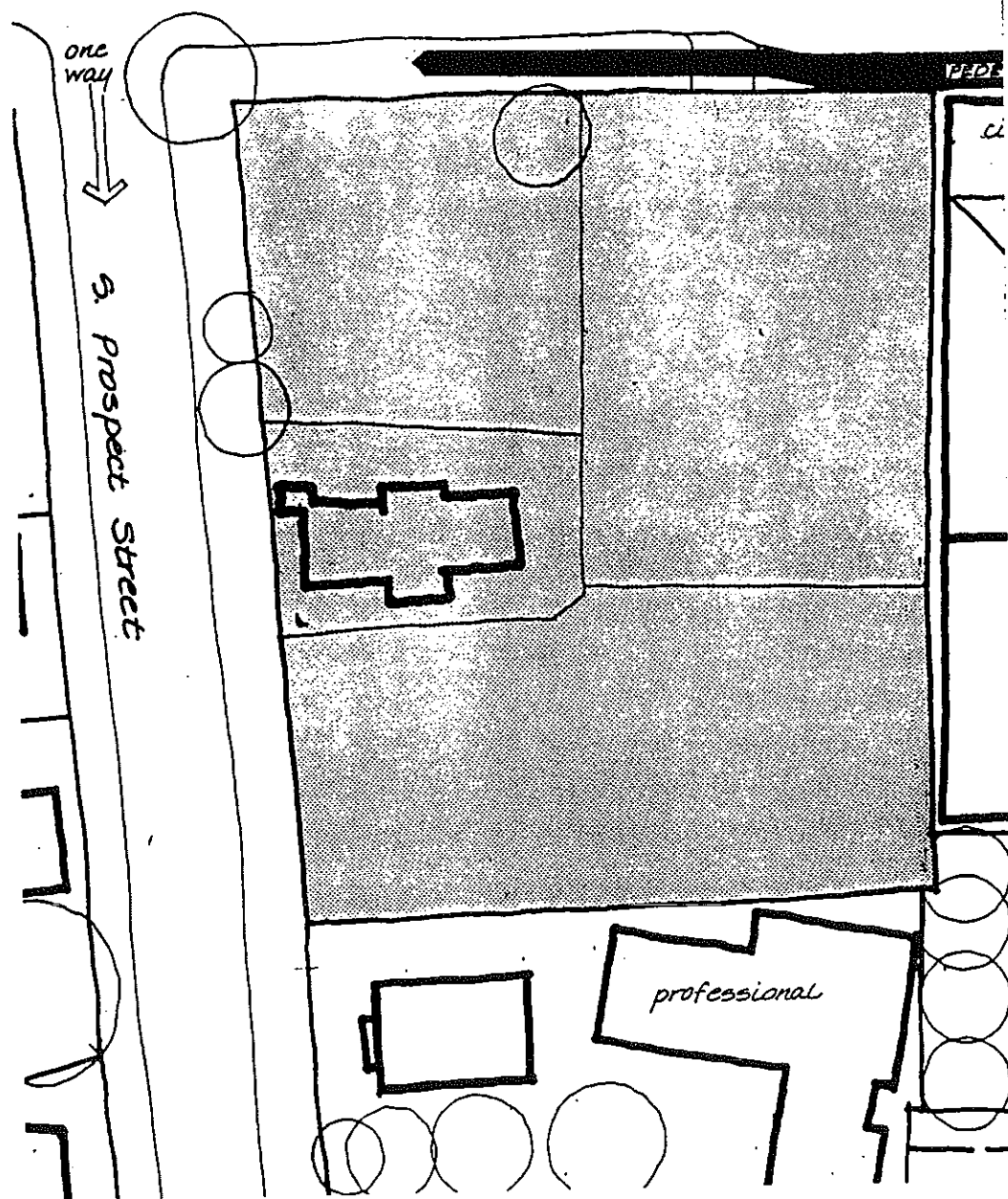
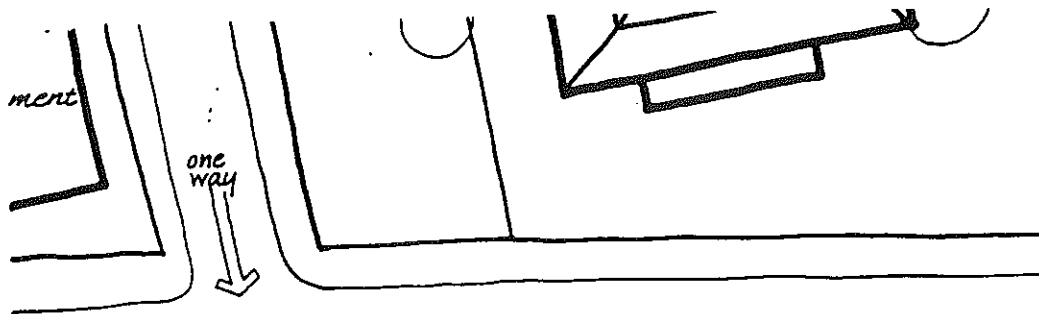
2. Visual Impact

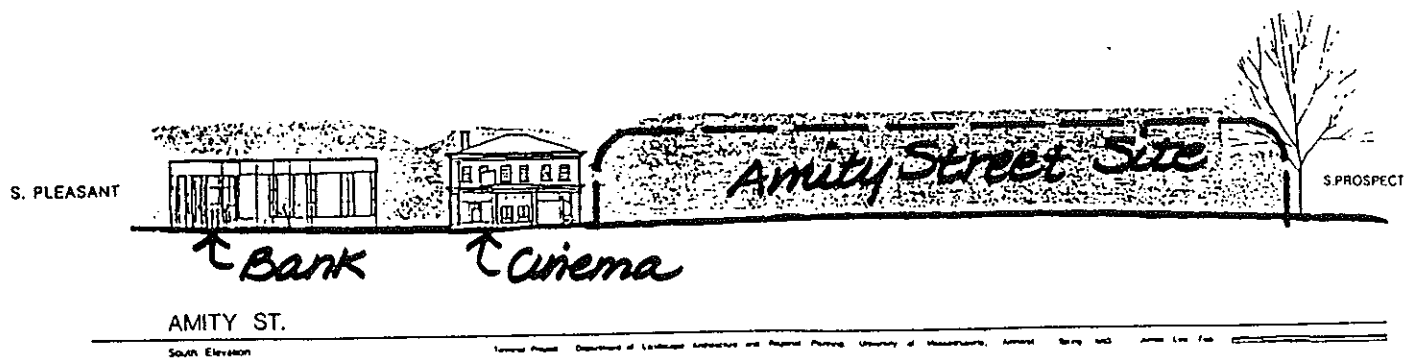
a. Siting the garage at the "back" of this site would allow the future buildings in front of it to act as a buffer or shield along Amity Street. Along South Prospect Street, however, would be a $\pm 120'-0''$ wide facade. It is highly recommended that this facade along the residential street be set back from the street and well landscaped.

b. The subsequent development of single, detached structures, with considerable setback along Amity Street would continue the pattern of the residential zone nearby. The lots should be landscaped and paved to clearly delineate the garage entrance driveway from walkways.

3. Development Potential

Using only the southern half of the site for the garage would allow for development on the northern portion of the property. (See paragraph 2. above) This would again result in the extension of the commercial area further west along Amity Street up to South Prospect Street. Whereas Option A, with storefronts along street level would continue a "downtown" pattern, Option B could be planned with setbacks that provide more of a transition to the residential scale in the next blocks to the east.





Appendix:

Site Analysis
Boltwood Walk

SITE ANALYSIS:

II. BOLTWOOD WALK SITE

Site Analysis

The site is located in a Commercial zone, bounded by the backs of buildings that define the core downtown area of the Town, the Bang's Community Center, and Plumbley's. Some of the rear entrances are being developed and the Town is encouraging more of this. The design of the garage should reinforce this goal by providing amenities onto which the rear entrances can open. In any case, pedestrian and vehicular access must be maintained for many of the properties.

To the East of the site, the activities of the Bang's Center, Plumbley's, as well as the Anne Whalen house constitute the great majority of the traffic through Boltwood Walk. Maintaining circulation paths for the users and residents of these buildings is an important criterion.

It can be generally recommended that any garage on this complex site would have to be smaller than ones considered for the other two sites, and allow for greater flexibility in developing adjacent areas for community or commercial use. The goal for the Boltwood Walk area to remain a predominantly pedestrian area should be maintained for the livability of the Town in general, as well as the residents of the Anne Whalen House and the users of the Community Center.

Recommended Scheme

The garage should be kept to the northwestern portion of the site, leaving the southeastern half open for landscaping and/or development. The area utilized is proposed to include the back half of the funeral home property.

Although the construction of a largely underground garage structure would allow for the greatest amount of useable land above, the prohibitive costs would probably eliminate this as a real option. Some of the issues are:

- a. the difficulty of designing a structural system for the building above, that would be compatible with the structural system of the underground garage
- b. added cost for excavation
- c. added cost for considerably heavier reinforcing walls
- d. the high cost of landscaping over the garage
- e. added cost for ventilation.

A small parking structure (120'-0" X 150'-0") with a larger basement level would be a more viable solution.

Small retail space along the ground level, facing a public open space to the south would enliven this zone.

1. Access

The main access to and from the site would best function at Main Street. Altering the street pattern at Lessey and Main and the removal of parking spaces on the north side of Main Street up to North Pleasant Street would relieve traffic congestion (see also Traffic Report). A secondary access from Kellogg Street would be maintained, but vehicular through-traffic should be limited to emergency purposes only.

2. Visual Impact

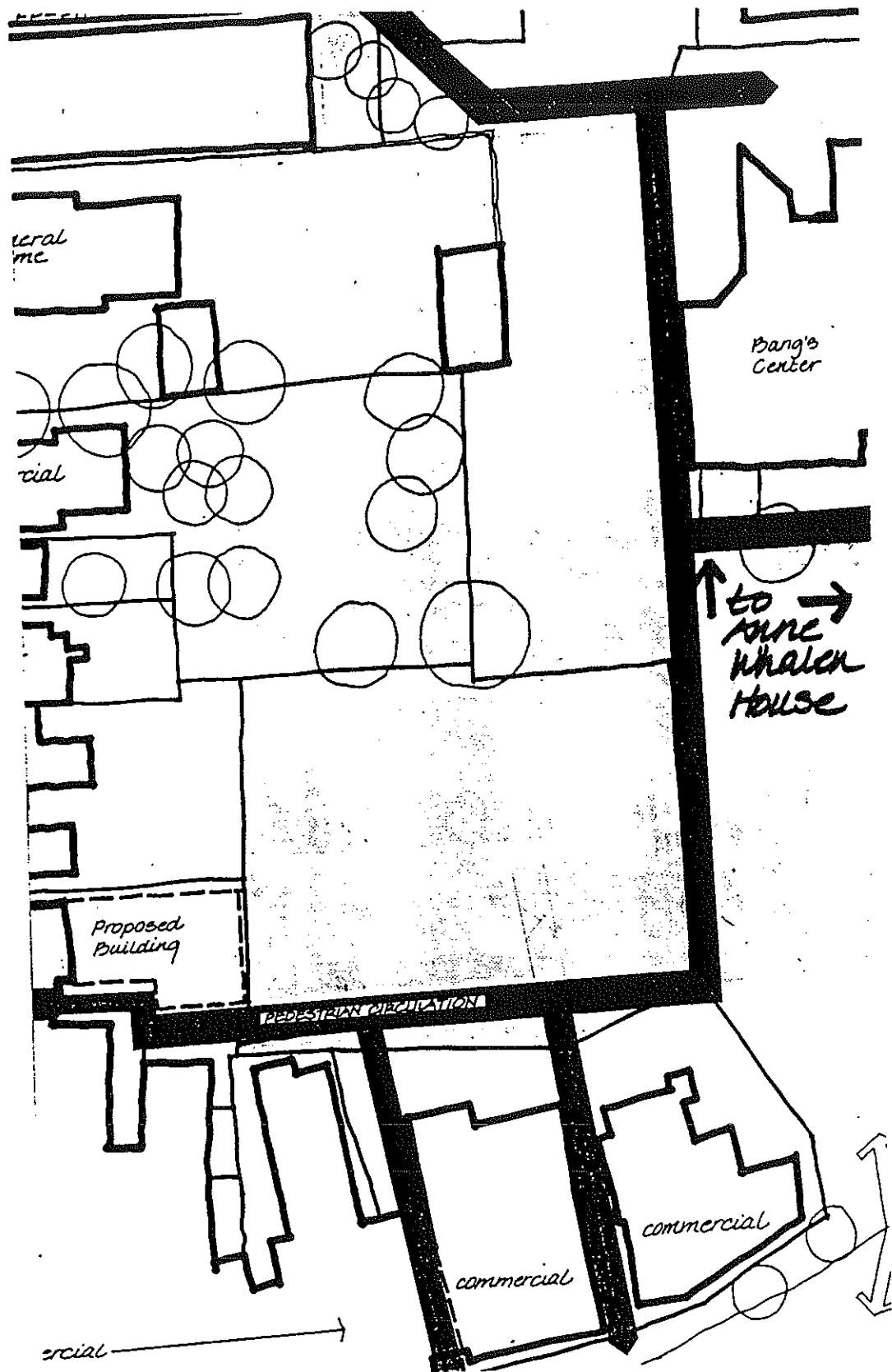
a. The appearance of the garage structure within Boltwood Walk as well as from the neighboring buildings is an important consideration. Specifically, this means views from the adjacent residential buildings, as well as the view by the pedestrians that use this area.

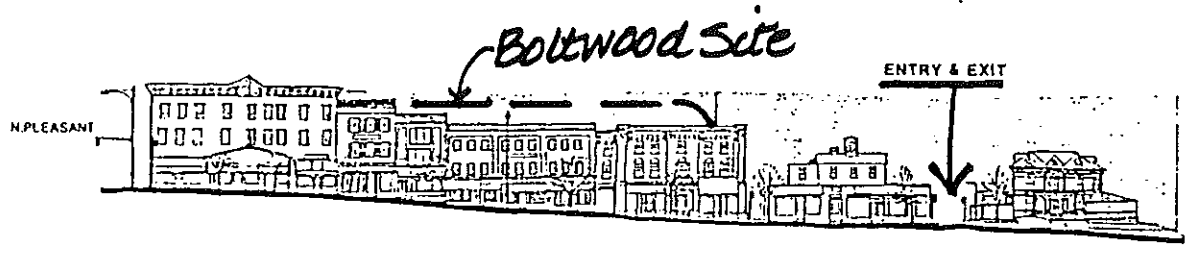
b. It is important on this site that the facade treatment of the garage responds to the human understanding of scale. The use of small scale elements and plantings to enhance the pedestrian's experience will be important to the final solution.

3. Development Potential

a. By providing an attractively landscaped open space, surrounding businesses would be encouraged to develop their rear entries, the experience of the pedestrian would be enhanced, and general pedestrian activity would be reinforced.

b. The building of a garage that leaves a considerable portion of the site for development could be a positive force in completing the Redevelopment Area. It seems that development has been hindered because of the inadequate amount of parking. Instead of viewing the building of a garage as eliminating valuable development property, a smaller garage could be a catalyst for the development of Boltwood Walk.

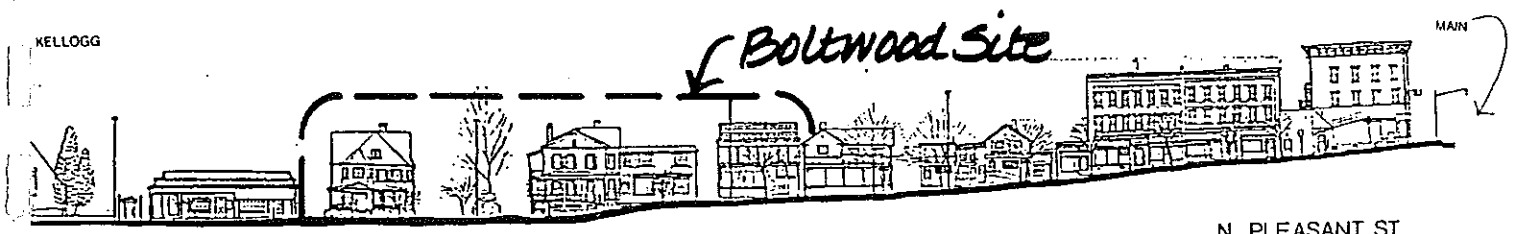




MAIN ST.

North Elevation

Town of Boltwood Department of Landscape Architecture and Regional Planning University of Massachusetts Amherst Spring 1992 James Lee Felt



N. PLEASANT ST.

East Elevation

Department of Landscape Architecture and Regional Planning University of Massachusetts Amherst Spring 1992 James Lee Felt

BOLTWOOD WALK SITE

Appendix:

Site Analysis
CVS / Louis

SITE ANALYSIS:

III. CVS/LOUIS SITE

Site Analysis

The site is located between North Prospect Street and North Pleasant Street, and is bounded by the Parish Hall to the north, commercial spaces to the east (CVS and miscellaneous others), and the Jones Library to the south. The area sits in a General Residence zone, and is bounded to the west by single family detached structures.

There are currently two attractive landscaping features of the proposed site: First, several large trees on the sidewalk along North Prospect Street should be saved. Second, along the southern border of the site is a stone wall that delineates the property of the Jones Library as well as the Strong House. Every effort should be made to preserve and enhance these elements.

The natural grade change may provide an opportunity to eliminate the need for a ramp inside the garage. This could be a substantial savings in space and cost.

Recommended Scheme

The recommended scheme occupies the northern side of the lot with surface parking along the south. It is illustrated in the Appendix "CVS/LOUIS SITE: Option One." The natural slope of the site allows the elimination of interior ramping from the ground to the first parking level.

A landscaped area on the southern edge for pedestrian use links the site with the Jones Library property. The green space, occurring at the intersection of the entry leading to the Library property and the site throughway, would be a focal point acting as an entry to the various activity areas of the site.

1. Access

1. Automobiles currently enter from North Pleasant only, and exit at North Prospect and this pattern should continue. The North Prospect access is also important for delivery trucks.
2. There is currently a conflict of pedestrian and vehicular traffic in the driveway access from North Pleasant. There are several solutions to this problem, a combination of which may be the best:
 - a. Reroute pedestrian access from the garage to a walk near the Fire Station.
 - b. Create a level change or other physical definition between the pedestrian and the car in the

driveway.

c. Encourage the use of one or more of the businesses as an access to the parking structure.

3. Truck service to the rear of the existing commercial buildings must be maintained; adequate room to maneuver would be provided by this scheme.

4. According to the Traffic Study by the Abend Associates, the added traffic load at the entrance on North Pleasant would not be a problem. Traffic conflicts at the intersection of Amity and North Prospect may be alleviated by the implementation of one or more of the following alternatives:

- a. Remove metered spaces at the corner of Amity Street
- b. Relandscape and remove any visual obstructions
- c. Change North and South Prospect streets so they align.

5. Providing an access to the garage from the parking area of the Parish Hall would be of great benefit to those using the Hall. Not only would the garage be patronized, but it would service the needs of the Parish Hall, and free up the on-street parking on North Prospect and Sellen Street.

2. Visual Impact

1. The Parish Hall to the north (see paragraph 4. above), the Jones Library to the south and the residences to the west are important neighbors to consider. A landscaped area on the south of the site would maintain an axis with the rear entrance of the Library while providing a pleasant entry for the parking area. Landscaping along a setback on the west side along North Prospect will also provide a transition to the residential area.

2. A three level garage would reveal a two level structure at North Prospect because of a $\pm 8'-0"$ level change from the east to the west side of the site. A four level garage may be acceptable because this will reduce the possibility that a residential neighbor would look out onto the roof of the garage.

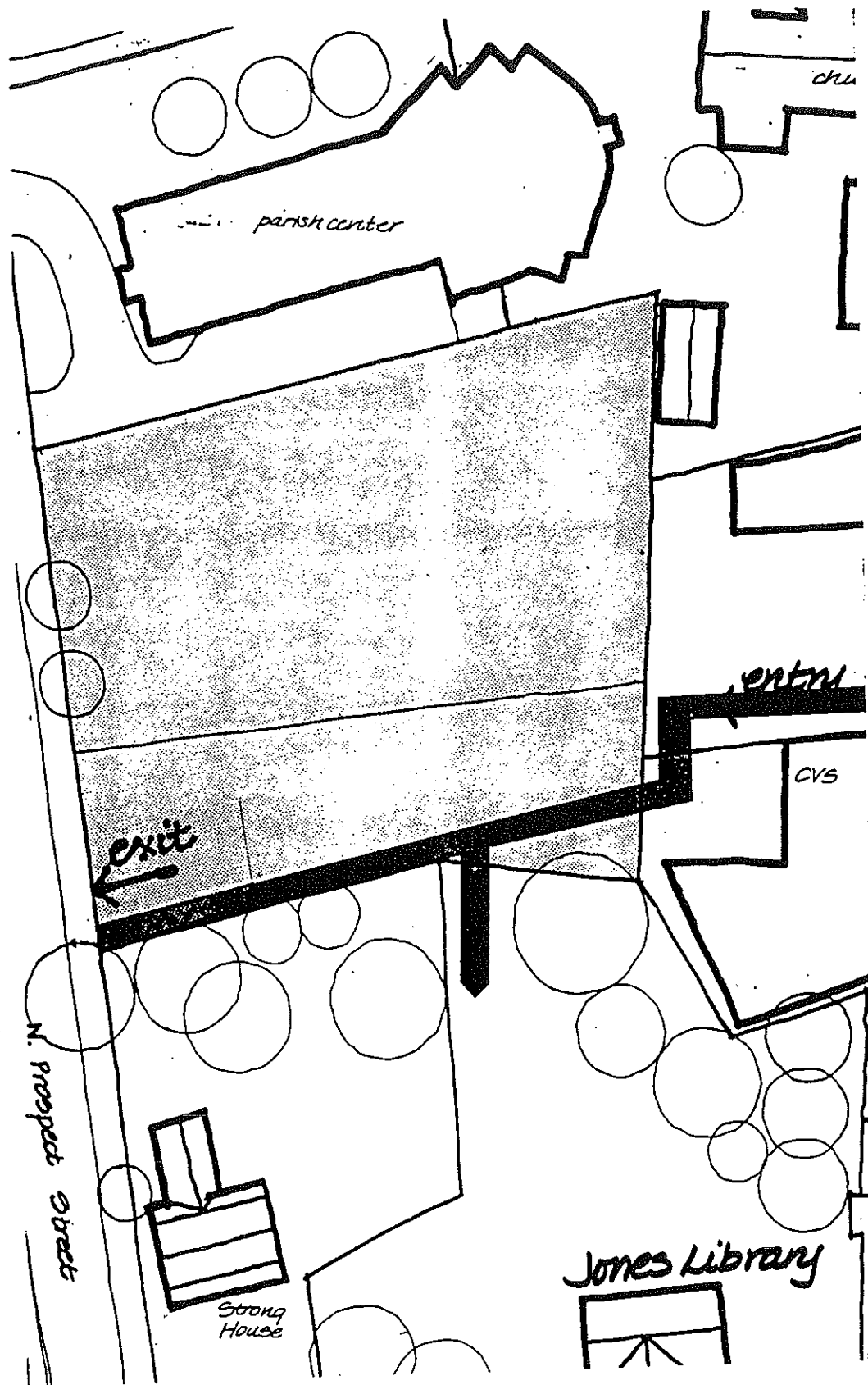
3. Development Potential

If additional development were desirable, a smaller garage structure, kept to the north and to the east of the site would allow for residential development on the

western side facing the existing single family structures. This option, though considered, is not recommended for further exploration.

A commercial plaza could be created by reserving the street level of the east side of the garage for small shops and upgrading the existing rear facades on adjacent properties.

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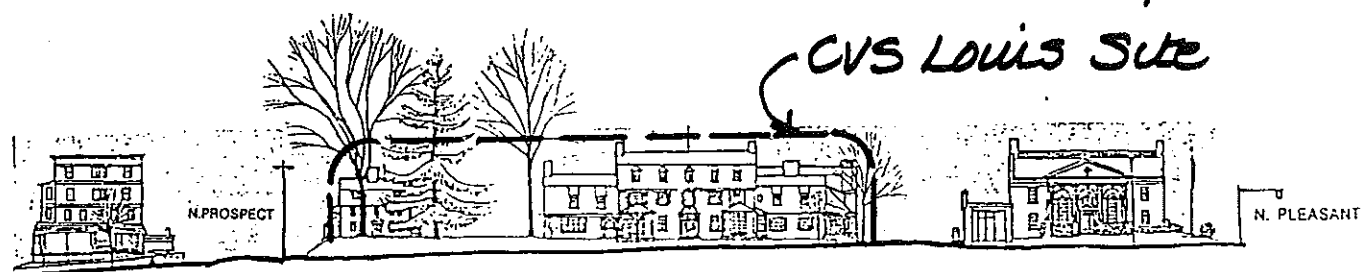




N. PLEASANT ST.

West Elevation

Terrace House Department of Landscape Architecture and Regional Planning University of Massachusetts Amherst Spring 1993 James Lee Felt



AMITY ST.

North Elevation

Terrace House Department of Landscape Architecture and Regional Planning University of Massachusetts Amherst Spring 1993 James Lee Felt

CVS/LOUIS SITE